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THE BIG BYTE THEORY

Whether you consume it or create it, data rules the future of tech. Here's why it should matter to you...

WHO CONTROLS ALL THIS BIG DATA?
WHAT ARE THEY DOING WITH IT?
HOW DOES IT AFFECT YOU,
AND CAN YOU USE IT TO GET RICH?

0 74470 25140 8

The elephant in the room

The discussion I want to open up for debate this month is about Big Data – the peg for our cover story this time. If you're completely new to this concept let me try to capture what it is in as few words as possible.

Many definitions have been written, but the best way to grasp the concept is by thinking about its enormity. Chew on this fact: every day we create 2.5 quintillion bytes of data (that's 18 zeros). Where does this data come from? It comes from every little status update you make, every bank transaction you complete, and even from the chatter of the (so far) lifeless network of embedded systems enveloping the world.

It's not the data itself, but the way corporations and governments have learned to mine this data that's interesting. Using sophisticated algorithms they can connect the dots in ways you wouldn't have imagined possible. Every aspect of our digital existence is on the brink of a profound transformation thanks to Big Data.

For example, with the proliferation of sensors, Big Data analysis will be able to predict the occurrence of natural disasters in the future. Imagine you're leaving home and your phone beeps "There's an 80 per cent chance of cloudburst over Mumbai. Either stay indoors or carry a life raft!" And that's the most pedestrian example I can think of.

Imagine a scenario in which data streams from centralised debt-risk lists, location sensors and credit card purchases are all being crunched by a powerful supercomputer. A man who's severely in debt is located via GPS in a shady part of town. Next, he pays for ammunition for his licenced rifle using his almost maxed out credit card. Somewhere a red ball drops, "72 per cent chance of criminal activity, John Anderton!" The shameless Minority Report reference aside, this is what the future holds, and we won't need three emaciated psychics in a protein soup to achieve this; just Big Data – matching patterns in creative ways from seemingly abstract and random 1s and 0s. What society does once it knows those outcomes is where those prickly moral questions come into the picture. Would we arrest people preemptively?

Let's leave the distant and perhaps scary future aside for now. Big Data will soon be used positively to create tailor-made experiences in fields such as education. Courses designed to suit individual needs – be it pace, teaching style or difficulty – will help students learn more efficiently. An emerging science called "Social Physics" being evangelised by a group of MIT researchers aims to make sense of all the digital bread crumbs we leave behind in our daily life to form "patterns of behaviour". They analysed digital data in real settings over a long period of time, and were able to discover conclusively that people change how they behave in measurable ways when they fall ill. By tracking mobility and call patterns, the researchers were able to accurately tell when a subject was coming down with flu, even before the subject began to feel unwell.

Today, targeted ads are already helping you find products you need even before you realise you need them – for example, ads will suggest a protective case when you post a status update about a new smartphone purchase. If you're getting a little queasy at the prospect of so much being known about you, wait till you read our cover story! Our premise, in fact, is that you're being packaged and sold as a product by the very same entities whose platforms you're so recklessly willing to use for free. There are tons of examples in the cover story of misuse of Big Data, such as a convenience store accidentally revealing a girl's pregnancy to her family based on analysis of her purchasing pattern, even before she knew it herself!

You might be wondering, in the light of all this negative information, what options you have as consumers. Sadly the question of whether to participate or not in this ocean of big data is no longer a choice. Going off the grid is only a fanciful notion. It's not something you can actually afford to do; not if you want to be a part of normal society. "I'm not on Facebook or LinkedIn," is increasingly not going to be an acceptable answer. This is where I'd like to bring your attention to the opening para of this editorial. Help me settle the debate by writing to me: Is Big Data a nightmare in the waiting or is it the ticket to a better life for all mankind?

Siddharth Parwatay
Assistant Editor
siddharth.parwatay@digit.in

"Sadly the question of whether to participate or not in this ocean of big data is no longer a choice."

Got feedback about this column?
Drop me a line at:
siddharth.parwatay@digit.in

Love thy neighbour(hood)

We love looking at things on a large scale. All of us, without exception. Right now, there are millions of us in India watching the FIFA "World" Cup, and cheering for our favourite teams – plural, because India never makes it to that grand stage.

We revel in the grandest of scales, and have built monuments to proclaim our love for this – from the Taj Mahal to the Pyramids and even the modern, yet mad, constructions of the tallest concrete towers across the globe – the bigger and more grandiose, the better.

Why look only at physical examples? Look at software, apps and services. Microsoft was once the world beater of tech, then it was Apple, Google, Facebook...and the tussle continues. So we all sit back and spend the few hours a week of free time we get, day dreaming about inventing the next Facebook. And a dream that shall remain.

Our cover story this month deals with the subject of Big Data, who collects it and should it bother you that you're the latest currency on the planet? Companies are trying to attract you towards them like flies to those UV insect light traps...they don't want you dead, but they certainly want you to be mesmerised!

Nothing wrong with wanting that, unless you don't buy into the modern capitalist way of thinking. Chances are, you're looking for a way to hop on the money train and grab a stash for yourself too. So long as we get paid (or better yet, bought by Facebook), absolutely no one cares If humanity is reduced to a bunch of button-pushing, brainless, Yo app users.

Now morality and the future of the human race be damned, lest I be called a preacher, or worse, *gasp* an evangelist! The question on all of our minds is, "How do I get my piece of the pie?" Right?

For starters, stop wanting the whole pie. Stop thinking of beating the people who have already beaten the world. In fact, stop thinking globally to begin with. None of these world-dominating behemoths and leviathans were made or even thought up as those. Facebook was a way for one particular college's students to interact. It wasn't built for the world, but the world wanted it, eventually, after a small group of people decided they couldn't live without it.

The magic lies in identifying a group with a specific set of needs that aren't being fulfilled – either at all, or not in a satisfactory manner. How do you do this? Ask yourself: "What do I miss?" Next, you use tools such as Facebook to find out how many more people in your immediate vicinity have the same unscratched itch as you. Start local and do it better than any other service or offering has ever dreamed of. The advantage you'll have starting out is being able to see people as people, and not just a number in a game of averages. Never take that for granted.

I recently posted on Facebook about a bad experience I had with Box8, a food delivery startup in Mumbai trying to do things a little differently, and I had a couple of people from there call me back and show genuine interest in trying to take my criticism.

This is markedly different from when I had a problem with, say, Amazon.in, where every email was replied to by a different executive, who obviously was not completely familiar with my complaint.

This is where localisation trumps. We Indians aren't only interested in the cheapest deals anymore, we're looking at service quality as well. Look at services such as Zomato – although they claim that they're catering to 12 countries, all I care about is my little corner of a suburb in Mumbai. "Near me" is all that matters in the real world, and not just for food...think plumbers, electricians, deals, discounts, doctors...there's a whole world of Big Data just begging to be stripped down into useful little local chunks. The only question is, will you be the one to do it?

Robert Sovereign-Smith
Executive Editor
robert@digit.in

> "Morality and the future of the human race be damned, lest I be called a preacher, or worse, *gasp* an evangelist! The question on all of our minds is, 'How do I get my piece of the pie?' Right?"

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and let me know your thoughts.

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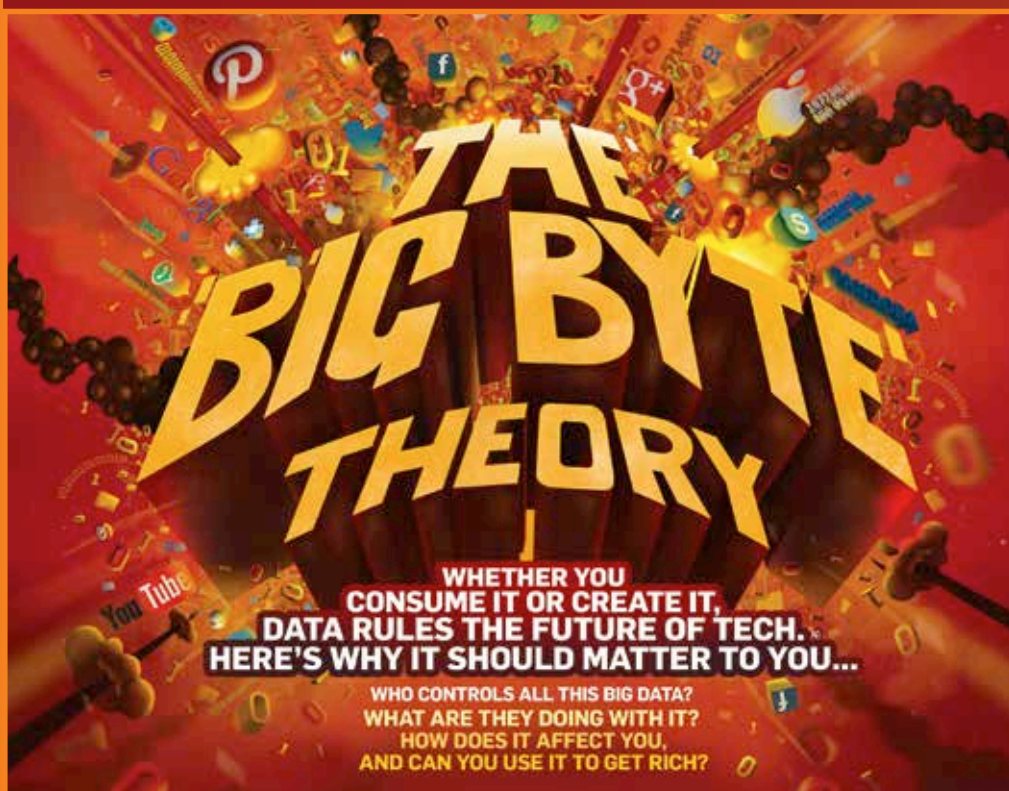
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E3 COMPLETE COVERAGE

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20+ Overclocking and benchmarking tools
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and more...

Essential Software
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Avast! AV
Ccleaner
Google Chrome
Defraggler
Dropbox
Freemake Video Converter
Hamachi
IrfanView
Java Update
K-Lite Codec Pack

Omega
E3 Press Conferences
Microsoft Xbox One
Sony PlayStation
Ubisoft
EA
Nintendo

Play
Painkiller: Hell and Damnation demo
Grave demo

Game Trailers
Alien: Isolation Survive Gameplay
Assassin's Creed Unity Co-op
Cuphead
Dragon Age: Inquisition Gameplay
Dreadnought
Everybody's Gone To The Rapture
Evolve Gamplay Breakdown
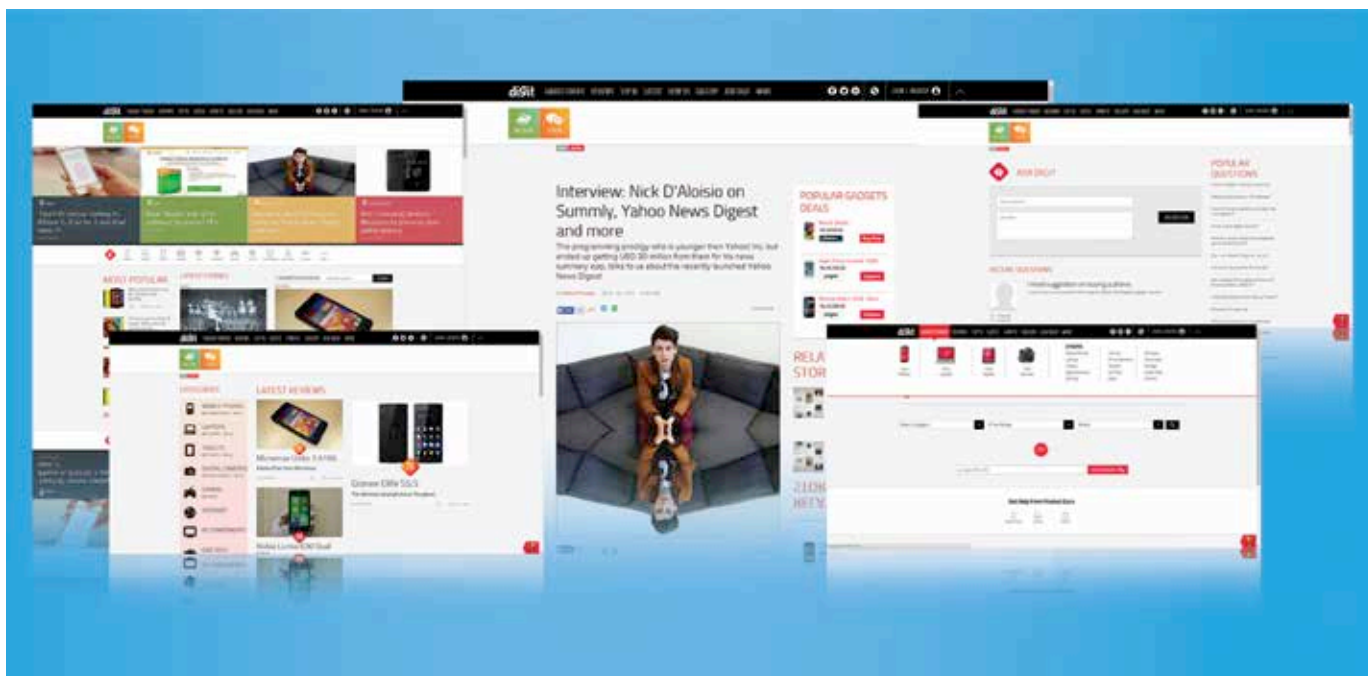Grave
Gunscape
Mighty No. 9
and more...

The Digit Forum
The forum remains mostly unchanged – why mess with a good thing right?

Prebook the magazine
Look for this icon on Digit.in and ensure you don't miss the very best articles on tech

Welcome to digit.in
Thinkdigit.com is now digit.in

Soham Raninga
editor@digit.in

For the past 13 years, we've been steadfast in our mission to be your most trusted friend when it comes to everything you may want to or should know about technology. That's why we are thrilled (and dare we say, proud) to reveal this brand new version of Digit. We're now simply, Digit, a name that

almost everyone interested in technology over the last decade (and more) has grown familiar with. We are celebrating our 13th anniversary with this spanking new website, which has been re-engineered for a better experience. Here's a quick walkthrough of what has changed and how we intend to deliver a much improved online

version of Digit with our new website – Digit.in

Responsive design
Digit.in is tailored for a seamless experience across all device form factors. By going responsive, we are ensuring the best viewing experience and easy navigation across desktops, laptops, smartphones and tablets.

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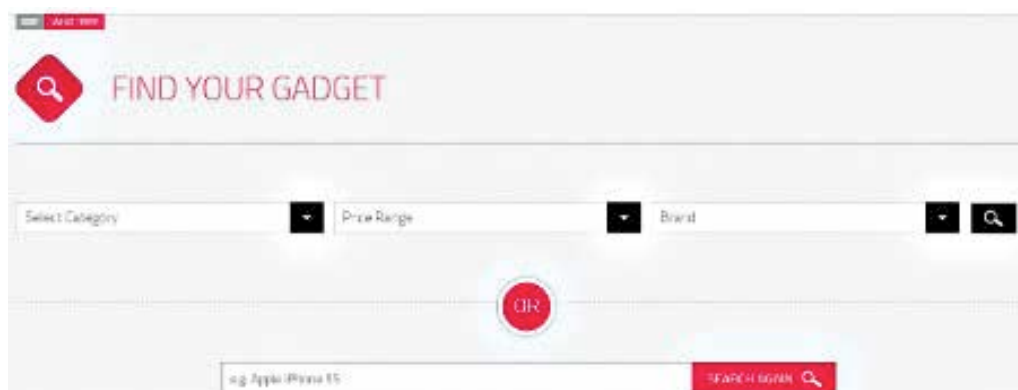
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page and the stories will keep flowing on and on and on…

Find, compare and buy gadgets

The all new Gadget Finder will ensure that you find any gadget you're looking for, effortlessly and quickly. We've also added a bunch of filters just in case you want to really be precise about what you're looking for. Our comparison engine with visual representation of key specifications make it easy for you to spot the difference via a single glance. And yes, we haven't ignored the pricing bit – every product in our database has pricing info from popular online stores.

Got a question? Just use 'Ask Digit'

We know how frustrating it can be when your tech doesn't work the way it's supposed to. With Ask Digit, you can post your questions and have them answered by both, the Digit team and senior community members. Ask Digit is an easy to use tool, simply click on the 'Ask Digit' option from the top site navigation bar, punch in your query and it's done!

Single Sign-On system

Existing forum members can simply logon to the site using their current ids to make use of the new site features (commenting, discussions, rewards program, contests and more). Existing forum members are required to click on the fourth icon highlighted in the image below to sign-in with their id. While new members can register for all special site features and our forum via a single sign-on system. Our single sign-on module supports social media profiles, making registering a one-click process!

More content types

Digit Top 10 is a result of your ever increasing love for our product shootouts. Find the best products across all popular product categories on the basis of ratings and reviews from Digit Test Lab experts. Don't

Single sign-on for existing forum users

miss our new 'Top Apps' section to get a curated list of the best apps across multiple categories and platforms. Android, iOS & Windows Phone, we've got it all covered!

Slideshows and video stories

With the new site, we are focusing a lot more on visual stories. We encourage you to checkout some of our latest slideshow features that showcase latest gadgets, product comparisons and even offer visual buying guides.

Larger, more gorgeous images

We know sometimes you just want to look at cool photos of the latest and hottest gadgets. Keeping that in mind, we've

made sure that every story is complemented by a large, good looking image to make your reading experience all the more pleasurable.

Always-on navigation bar

The new universal navigation bar will always be around in the browser frame, making it easy for you to quickly jump to different sections.

Search

We have fine-tuned our search engine to give you relevant results which are sorted by content types, making it easy to find the content that you are looking for.

Rewards program

Yes, Digit readers get rewarded for reading, sharing, commenting and engaging with the site. Register yourself on the site and see the points ticker take-off as you spend more time on the site. Move up the ranks as your status changes from a 'Beginner' to a 'Tech Guru' and avail special benefits for being one!

We've spent quite a bit of time bringing the new Digit.in to your browser and we really hope you like it. However, you may run across some bugs while browsing the site. Do point them out to us on email at editor@digit.in

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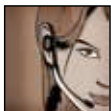
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Read about all that went down at Computex, Taiwan this year from Kunal and Anirudh.

STAR WORLD

Twitter acquires SnappyTV
The social network continues to evolve as a broadcasting platform with its latest acquisition
http://dgit.in/TwitterSnappy

✉ Congratulations on changing from thinkdigit.com to digit.in. I was surprised on being directed to digit.in. I was confused to find another Digit on the web so I visited your Facebook page to confirm and breathed a sigh of relief on knowing that the name change was a part of a redesign.

Many of your avid readers may have already told you, but the previous website design was very congested. After having a glance at the new site design, I can bet that this will be the best technology website. Best use of CSS and HTML5.

I like the topics you guys discuss in the magazine and the content you share on the CDs. One thing that I really appreciated was the interview with CouponDunia CEO, Sameer Parwani. His story is an inspiration for anybody wanting to start their own business. Your cover story about space battles was also very useful. I love to read such articles.

Thank you guys. Keep it up.
–Karan Tulaskar

d It's not just the web site that we're re-working. The coming months hold many more of such pleasant surprises. Also, if you like reading about all things related defence then check out http://www.janes.com/defence
–Mithun

✉ Happy 13th Anniversary, Digit! Hi guys, I'm a 12-year-old geek and the June issue was the 6th issue of my subscription. You're simply awesome and there's no one to compete against India's No.1 magazine, and truth be told it is wholesome.

Some observations and suggestions:
1. Last month's Fast Track was so good that I read it fully for the first time.
2. Encyclopedia Technica was also good.
3. Try to put ads between articles not in between articles because I end up skipping them. Your ads are awesome so please try to put more ads. Why? Because I like those advertorial sections.
4. DGT is also worth a mention and fun to read.
5. It's time to change the UI of your DVD.
6. Why don't you provide nice games in your Skoar! DVD like you've done in an old issue I came across. You had given NFS Carbon in a DVD. Then in another DVD, you had given the movie Ice Age.

Feedback for the June 2014 issue of Digit

7. Your new website looks amazing.
8. 13 of Everything was a very good cover story and I liked it a lot as it had many pages.
9. Thanks for bringing back Skoar! in your magazine. Please review Watch Dogs in it.

Once again, it's awesome to read your magazine and it's fun till the end. Thank you guys for bringing such a wonderful magazine to us.
–Ayush Kenbi

d This letter strums the strings of our hearts. We are working on redesigning almost all elements of the entire package and the DVD is soon going to be in our crosshairs. You can find the occasional free Steam game in Skoar and we've even reviewed Watch Dogs in this issue (pg. 112).
–Mithun

✉ Namaste Tech Gurus,
First of all, I want to say that you've changed drastically from your inception in June, 2001. You're the best source for navigating us in this world of constant technology dilemmas. Your magazine is awesome but you know that nothing is perfect. There's always room for improvement. Here are some of my tips to make your magazine even better:

1. Each issue of your magazine should have one or two articles in our national language, Hindi.
2. Why don't you provide some technology related jokes? In fact, why don't you bring back 'Backbyte, the lighter side of computing'?
3. Recommend a list of recently published books related to technology.
4. How about providing a quiz? (Another thing to resurrect – Qubit)
5. Publish an article with title "Hack Of The Month"

That's the end of my wishlist. It seems my other emails didn't reach you, as I didn't get any replies, but I hope this one will catch your attention. I read the letter of a guy in your first edition saying that Digit is a con game. But who would have thought that this "con game" would go on to become the don of technology magazines. Guys, you are the best, and will remain the best.
–Adhyayan Panwar

d A massive re-design is in the works and we'll be incorporating many of the requests readers have suggested including yours. Stay tuned. And for now, a small example of the redesign can be seen in our comparison test this month. Let us know if you like it.
–Siddharth

LETTER OF THE MONTH

✉ I have been reading Digit since, well since before it was called Digit. I am a proud subscriber for many years. It was and still always is, a good source of latest tech info, in a easily palatable language to even a non-technical enthusiast. It is a guide, a mentor and a great adviser.

So far, like a classroom in a typical Indian institute, the flow of information was one way, from Digit to the reader. We took in every word as a gospel truth and Digit never lead us astray. But I have notices a change from October 2013 issue. It may have started earlier but I have noticed it in October. The tone of Digit is now more like a good teacher. Now it does not provide data in a spoonful, instead, it provides guidelines, which makes the reader think.

One example will be the selection of any tech product. Like "Buy Smart" article in the October 14 issue: it does not recommend a particular product, but eggs on the reader to think what he needs more than what he or she "WANTS" Of course, Robert in his editorial states clearly that ' ..We really want ...India to ask the right questions,... every buyer to be able to make up his or her own mind...'

But it took me to realize it after a few more issues. This is more relevant now because, most of the (Digit) readers are gaining more tech savvy, are more well read and knowledgeable, at least partially thanks to Digit, and have a vast knowledge bank at the fingertips in the form of the internet. So now it is not a magazine for the dummies, but for the thinking minds. Keep up the good work.
–Anirudha Cheoolkar

You WIN A Digit T-Shirt

🔲 Mighty perceptive of you Anirudha. Your letter echoes some of the liveliest internal discussions we keep having in our edit meets. The reader is indeed more knowledgeable now and we couldn't be happier. It keeps us on our toes and we get to have some enlightening discussions with each of them. Yet we hope to never lead the reader astray and continue to be a guide to technology in whatever form we can. Thanks for coming along in this journey together.
–Siddharth

plus. Unfortunately, my experience with Digit eMagazines has been mediocre (compared to other e-Mags). Here are some of my complaints:

1. Links are not clickable - This is a major bummer! What's the point of an eMag if I have to type out a link in my browser, as I'd have to do if reading from a print magazine? A major inconvenience.
2. Content not linked - Some basic navigation enhancement is a must since the current version feels like a plain PDF document. I should be able to click on an article listed in the contents page and jump straight to it. The same applies to all linked articles/pages.
3. Retina images - In the present era of HD, QHD and 4K displays, high resolution content is a must. Almost every single image in the eMag appears blurred on retina screens like iPads, retina MBPs etc. It would be nice to have a HD version of the eMag with high-res images. It would add to the overall aesthetics.
4. I'm sure the team could take some pointers from international eMags like Wired or PCMag and even national eMags like India Today - they have good tablet optimised versions of their magazines, and boy they're a joy to read!

Your team has been doing a fantastic job. I wish you all the very best for the coming years. Stay geeky, stay cool.
–Manindra

🔲 Hi Manindra,
Letters like these make all the toil worthwhile :-)

So nice to hear that you got into Summer of Code. Congratulations on that and best of luck for your MS program.

All the points of criticism you've mentioned are extremely valid and we're working on a Digit App as we speak which will (hopefully) iron out all those issues. The project is very hush-hush, by the way, but we'd like to invite you to beta test or maybe even help with development once it's at a certain stage.
Don't forget us and do keep writing in with criticism. We really appreciate it and it helps us get better.
–Siddharth

✉ Hi Team Digit !
I've witnessed Digit grow over the years from its humble beginning to becoming the undisputed tech magazine of the country (Thumbs up for the new Digit.in!).

Even though the magazine and its content have evolved over the years, the witty language and the pinch of humour have been maintained. Supplements like Fast Track and Skoar! add to the overall value of the package. I also owe the Devworx team special thanks for initiating me into Open Source development. I remember reading an article on how getting involved in open source development helps budding developers learn about real world software development and gets them in touch with some amazing developers from around the world. As a result of my open source contributions, I was selected for Google Summer of Code 2012. It's a summer internship program sponsored by Google, which provides an opportunity to college students to work on open source projects and simultaneously earning some serious cash (stipend of $5,000). After that, I continued to work on bigger open source projects. As a result, this fall, I'll be going abroad to fulfil my dream of pursuing an MS in Computer Science at one of the best universities in the world! I couldn't have been here had it not been for your article on open source. You guys really changed my life! :)

Now for some criticism: I'd always been buying Digit issues from my local news stand. But since the past two years, after getting an iPad, I decided to go the eco-friendly way and subscribed to Digit on Magzter. The added portability was a

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Asia's biggest tech event happens at Taiwan every year, and like every year, we were there to bring it to you...

AMD brings Kaveri to the mobile platform

AMD had announced its new Kaveri desktop APUs (Accelerated Processing Units) last year which was said to be the company's most powerful processor particularly in the graphics performance. Later we saw the company announcing the low-powered processors for tablets and notebooks, Beema and Mullins. At Computex 2014, the company has yet again announced a new product; the mobile version of the Kaveri APU. With the announcement AMD also claimed that it is now

ready to take on Intel's Core i5 and i7 processors.

Now the architecture of the new Kaveri mobile processor is same as the Kaveri desktop version which include x86 Steamroller CPU cores combined with AMD's Graphics Core Next Architecture with Radeon R7 series graphics. This is the first mobile chip that pairs the CPU and GPU together using AMD's HSA (Heterogeneous System Architecture) technology, which is extensively used in making smartphone and tablet processors. The APU is designed in such a way that it

allows the system to run more efficiently as the processor can assign some of the computing tasks from the CPU to the GPU to improve the performance.

The mobile version of Kaveri has up to 12 compute cores, which includes four CPU cores and eight GPU cores. The combination of these cores is said to churn out 818 gigaflops of performance. It also supports Ultra HD (UHD) 4K resolutions and new video post-processing enhancements that has the capability to upscale HD 1080p videos to 4K quality on UHD-enabled displays. In

terms of battery life the new Kaveri Mobile APUs are said to be power efficient as they can deliver upto 9.2 hours of battery life while browsing the web.

There are nine versions of the Kaveri mobile chips, three from the A-Series SV line, three ULP parts, and three Pro SKUs which are exclusively for commercial applications. As usual, AMD compared their chips with Intel's, claiming the new FX-7500 which is a quad-core processor with a maximum speed of 3.3 GHz along with six GPU cores. When compared to Intel's Haswell-based Core

i7-4500U it proved to be 50% faster in compute and graphics capabilities. However the FX7500 is not as energy efficient with a 19W rating against Intel's 15W.

Under the Kaveri badge, AMD also announced its first FX branded high-end APU which is aimed at bringing better performance for gaming. AMD didn't talk much about the FX-based APU, but confirmed

AMD Kaveri

that an HP gaming laptop will be using this processor.

The new mobile Kaveri APUs will start shipping this year and AMD has already roped in OEMs including Acer, ASUS, Dell, HP, Lenovo, Samsung and Toshiba.

In the business league AMD announced the Pro Series to take on Intel's vPro processors. There are three key features of AMD Pro Series that separates it from the consumer range. First, at any given price, the Pro APU will outperform its consumer counterpart. Second, the same Pro models will be available for longer, and third, AMD is promising a more stable software image with few changes to the BIOS or drivers.

Mobility at Computex 2014

While Computex is primarily one of the biggest shows for everything related to computer hardware and software, there

were also some very interesting products in the mobile computing sector. Various OEMs including Dell, Acer and ASUS showed off some impressive devices in the mobile division.

Dell showcased its refreshed Android based tablets, the Venue 7 and the Venue 8. The Venue 7 features an HD screen, is based on Android 4.4 and uses the Intel Atom Z3460, a dual core 64-bit Silvermont-based Merrifield processor clocked at 1.6 GHz. The Dell Venue 8 upgrades the screen to 1920x1080, and uses the faster Atom Z3480, another 64-bit dual core Silvermont-based Merrifield processor clocked at 2.13 GHz. Both tablets feature audio technology from Waves MAXX Audio Pro and both of the new tablets will be available in red and black from 1st of July on the Dell web site. The Venue 7 will cost $160, and the Venue 8 will be available for $200. Hopefully it will be headed to the Indian market in this quarter.

Acer showcased a large portfolio of mobile devices including three tablets, four smartphones and a smartband. In the tablet department Acer had the Iconia One 7 which is a 7-inch tablet

Dell Venue 7

running on an Intel CPU and Android 4.2.2 with a nice textured back. The tablet will be available in a variety of vibrant colours. Then we have the Iconia Tab 7 and Iconia Tab 8, both of which run on Android 4.4.2 and while the Tab 7 has a 7-inch HD display, the Tab 8 has an 8-inch full HD display.

In the smartphones department Acer had the Liquid Jade, which sports a 5-inch HD display along with an elegant curvy design and a thickness of 7.5mm. It also features a 13-megapixel camera with f/1.8 lens with 8GB or 16GB options with a microSD card slot. Next we have the Liquid E700 which is again a 5-inch device with an IPS HD display

Acer Iconia Tab 8

with a large 3500mAh battery and triple-SIM card slots. There is also an 8MP camera, a quad-core MediaTek processor along with 2GB of RAM and running on Android 4.4.2. Then we have the powerful Liquid X1 which runs on an octa-core MediaTek CPU with 2GB of RAM, a 13MP camera with f/1.8 aperture, LTE radio and Android 4.4.2. Lastly, in the affordable range, we got a glimpse of the Liquid Z200 which is a 4-inch device running on a 1GHz quad-core processor with 512MB of RAM, 4GB of expandable memory, a 2MP camera and Android 4.4.2 Kit Kat.

Acer also had the Liquid Leap smartband which can be synced with your smartphone to

Acer Liquid Leap Smartband

give you notifications and it can track your sleep, steps, distance travelled and calories burned. It can also pause, play and skip music tracks and it comes in a variety of colours.

Finally we jump to ASUS where we saw some new tablet announcements along with the

previously announced Zenfone series of smartphones. The new launches included the MeMO Pad 7 and 8 tablets which will be available from mid-June. The MeMo Pad 7 features a 64-bit Intel Atom Z3745 processor (up to 1.86GHz, quad-core) and HD 1280 x 800 IPS displays. The 8-inch ASUS MeMO Pad 8 (ME581CL) features the 64-bit Intel Atom Z3580 2.3GHz quad-core processor, and ultra-fast connectivity with 802.11ac Wi-Fi, Long-Term Evolution (LTE) and wireless Near-Field Communications (NFC).

The all new Fonepad 7 and 8 tablets were also shown which run on the latest 64-bit Intel Atom Z3560 1.8GHz quad-core processor. Both models fea-

Wireless charging for Moto 360
New FCC filing puts light on possible wireless charging on the Moto 360 prior to its preview at Google I/O
http://dgit.in/Moto360FCC

Cruise, another self-driving car
Cruise Automation is building a self-driving car which would be priced as a consumer product
http://dgit.in/CruiseCar

Buzz

ture 1280x800 IPS displays and ASUS SonicMaster audio with dual front speakers. They also have 5MP rear-facing and 2MP front-facing cameras. The Fonepad Series features 3G connectivity and comes with dual SIM card slots and will be available in black, white, gold and red colour options.

Probably one of the biggest announcements at Computex was the Transformer Book V which is the world's first five-mode, three-in-one converged laptop that features a Windows and Android laptop and tablet as well as an Android smartphone. The design comprises a laptop with a detachable 12.5-inch screen that becomes a separate tablet and a 5-inch smartphone that docks into the tablet. As a laptop, Transformer Book V includes a full QWERTY keyboard and touchpad, and runs both Windows 8.1 and Android 4.4 KitKat. A dedicated hardware button provides instant and seamless switching between the two operating systems. The laptop features a next-generation Intel Core processor, a 12.5-inch HD IPS display and storage options of up to 1TB. As a tablet, Transformer Book V also works as a standalone Windows 8.1 tablet and an Android 4.4 KitKat tablet when the phone is docked. The tablet has a built-in storage of up to 128GB. As a phone, Transformer Book V runs Android 4.4 KitKat, and is the world's first 5-inch LTE smartphone powered by an Intel Atom quad-core processor along with a 2500mah battery that provides up to 10 hours of web browsing time.

Fast RAM
You're proud of that 2133MHz RAM kit aren't you? Cower in shame you poor creature for your RAM is now obsolete.

ASUS Transformer Book V

We spotted at least two different RAM kits that crossed 3500MHz, and at least six that went beyond 3000MHz; not to mention the few DDR4 samples we managed to get a look at as well.

If that wasn't enough, Gigabyte showcased some next level RAM OCing on their brand-spanking new Black series Z97 motherboard, pushing the RAM to a record breaking 4500MHz!

Speedy SSDS
Speed is everything and a PC without a fast SSD is a formula one car with road tyres. We saw many SSDs, including one from Apacer that was frozen in a block of ice and others that were immersed in water. We also spotted a PCIe SSD from G.Skill, "only" 950GB, but boy was it fast, G.Skill claimed an official transfer rate of over 2GBps. From what we've understood, speaking to all the various companies manufacturing SSDs, M.2 drives are slated to replace the mini-PCI-E drives we see today.

Plextor's M6.PRO stood out at Computex, which is quite a feat. It uses proprietary soft-ware to take the SSD rocketing past most regular SSDs, offering bandwidth in excess of 4GBps (in synthetic tests of course).

Digital PSUs
A few months from now, all your existing PSUs will be obsolete, still capable, but behind the times. Every major PSU manufacturer in Taiwan, including Enermax, FSP, Cooler Master and more are working on some variant of the Digital PSU or the other. These are very interesting as now you have software access to the PSUs, allowing you to monitor efficiency and power consumption in real-time. You'll also get a chance to tweak voltages on the fly, an overclocker's and DIY'ers dream. We know for a fact that Cooler Master, and at least one other PSU manufacturer, is working on some sort of mobile app that can be used to monitor and tweak PSU settings on the fly. The app will connect via Bluetooth, so you can rest assured that you won't fry some precious component from the other end of the Earth.

4K monitors
HD is now passé. 1080p has become the norm on small screens, but anything larger than 7-inch is already fast heading to 4K, the next level. Our eyes were treated to a frankly glorious assortment of 4K ready monitors and laptops and boy did they look good. Also, there are dissenters who insist that 4K is irrelevant, that we won't notice the difference between the two resolutions. To those poor souls, we would ask that they get their eyes tested. As long as you're watching 4K content on large (greater than 22-inch) 4K screens, there really is nothing else that you'll want to see.

4K is a trend we're very excited about. Hopefully it'll become mainstream by this time next year.

Mini PCs
These were all the rage as well. Almost every manufacturer had at least one mini-PC to show off. These mini-PCs range in size from smaller than an Apple TV to just shy of being the size of a literal brick. What surprised us was the power these tiny little computers boasted off. PCs like ASUS's ROG gaming series were slim enough to disappear in a book-case, but other cases from the likes of Cooler Master were just a little bit larger and allowed you to fully customize your build as you see fit, even allowing for full size graphics cards.

Is the day of full-tower cabinets at an end?

A new Cooler Master
Big news, Cooler Master is going for a completely new brand identity. A meeting with one of their marketing heads in their top secret lair informed us that Cooler Master is attempting to re-engineer itself. The brand's focus will

The Computex experience, not just gadgets!

Wherever we went there were ladies asking us to photograph them, so we did. We're a lot of things, but rude we aren't!

now be on elegant products and services and more refined and minimalist designs. Since this was all sub-rosa and we have a reputation to hold up, we can't really tell you anything more. Do keep an eye here though. We're keeping a very close eye on developments ourselves and will keep you updated with developments.

Power banks, power banks and more power banks

Power banks are literally everywhere. We've seen just about every booth in Computex featuring some sort of power bank or the other. We were greeted with, quite literally, walls of chargers and portable power banks and to be quite frank,

the sight gets tedious. These were ranging in capacity from a measly 2,000mAh all the way to 10,000mAh and beyond. Local brands were offering 4,000mAh power banks for as little as ₹600 each, though we can't comment on the quality of the output.

To be fair however, one of the best devices we encountered at Computex has to be Kingston's MobileLite Wireless G2 device. It's a portable charger, a wireless router, a media streamer and a portable memory card reader. There's no word on price yet, but this is a device that you just HAVE to own. No question about it. Though plenty of other brands have already started unveiling their versions of the device.

GAMDIAS

This is a company that manufacturers gaming peripherals and is an active participant in the e-sports community and while it's restricted to Taiwan for now, the company is hoping to get a toehold in the Indian market soon. We sure hope they do for their products are quite excellent. The gaming mice and keyboards will give any Razer or Logitech product a run for its money and the headset we heard, the Hephaestus, is quite possibly the best surround sound headset in a long while, subject to a full review of course.

3D Printers

We did encounter a surprising number of 3D printers, though

many of them seemed to be based on the same design, which was probably lifted off the Internet anyway. One very interesting printer, or rather, software for a 3D printer, that we encountered, allowed you to take a picture of yourself and have your head printed out on a body of your choice. Freaky, but fun.

...and much, much more

Computex is too vast to be covered in these few words and since a picture is worth a thousand words, we've put up dozens of photos online on the spanking new digit.in. You can access all Computex related content at http://dgit.in/DigitComputex2014

MediaTek MT6592

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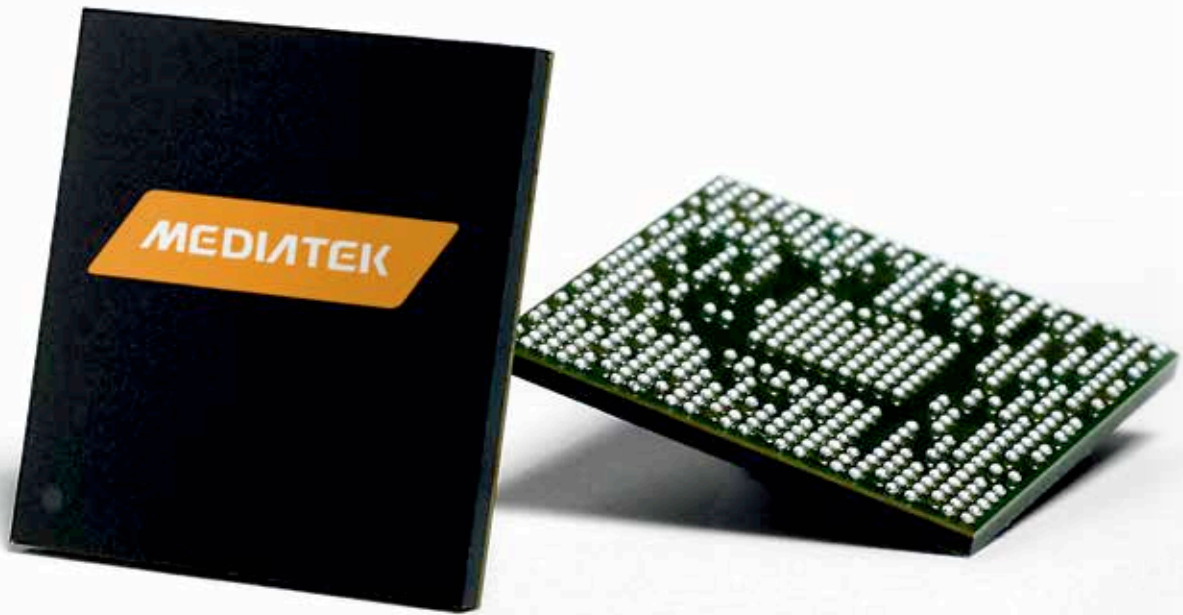
True Octa-Core Mobile Platform

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  - Industry-leading Dual-Cluster/Dual-Active (DCDA) architectural design

◢ **Powerful Mali450-MP4 Graphics Core**
  - Clocked at 700MHz, delivering 152Mtri/s and 2.8 Gpix/s performance
  - Providing uncompromised user experience for Full-HD display at 60fps

◢ **Advanced Multimedia Features**
  - 1080p 30fps Video w/ World-first HEVC & VP9 playback support

  - ClearMotion Technology : Motion-Blur Free Video Playback as 60 fps
  - MHL 2.0 support for multi-screen applications/ultra-portable PC - High-Fidelity 24-bit Audio support

◢ **Android v4.2.2 "Jelly Bean" and v5.0 "Key Lime Pie"**

◢ **Chromium browsing experience on mobile phones/tablets**

◢ **Multiple-window, laptop-like experience on mobile devices**

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A look at how by buying online you may be putting your warranty eligibility at risk. So say the manufacturers...

32 **Security watch**
With newer threats emerging every day it pays to keep an eye on the security landscape. That's what we're here for.

Behind the mask of efficacy

Not all is what it seems in the tech world. This month we take a look at major companies who seem to be concurrently winning and struggling with their offerings

Transparent sensors in Gorilla Glass panel

Researchers at a Canadian university have successfully implanted transparent sensors into Corning's Gorilla Glass. This development could help in the manufacture of touchscreens with sensory devices. Soon we could have smart-

Sensors have been successfully embedded into a Gorilla Glass panel

phones with sensors embedded into their screen!

This is the first time sensors have been successfully embedded into a Gorilla Glass panel. The researchers say that Corning's product was the best option for such an experiment as they were able to achieve the lowest-measured loss value, fastest fabrication times and the longest high-quality waveguides of any glass ever.

The researchers used optical waveguides to throw photos directly through the glass panel itself instead of running electricity through wires.

Raman Kashyap, a professor of electrical engineering at the Polytechnique Montreal in Canada, says, "It should be

possible for manufacturers to begin building this technology into smartphones within a year with 'focused development'. We're actively looking to partner with industry to exploit this technology."

According to a paper published by the researchers at Optics InfoBase, a sensor was passed into the scratch-resistant glass for the first time. The researchers reportedly took 10 seconds to write sensors into the glass using waveguides.

They also found a way by which to ensure that a phone couldn't be cloned. This was made possible by successfully passing a unique waveform into the panel, which glows uniquely when an infrared light is passed through it.

According to PC World, Corning hasn't yet given out any statements officially affiliating itself with the experiment, despite having its own researcher Ming-Jun Li as part of the team that carried out the experiment.

Motorola admits Moto G issues

In June, Motorola India resolved the problem of Moto G smartphones with unregistered IMEI numbers – a problem that may

have caused some units of the popular Android smartphone sold in India to not work on domestic networks. Motorola apologised for the issue and said that it had offered affected customers both, a full refund and the choice to replace the faulty handset, apart from a ₹1,200 credit to their Flipkart accounts. We don't know how many users were affected by the IMEI problem or how many chose to return their handsets for a refund, and both, Motorola and Flipkart haven't released any figures.

Motorola stated that it has reached out to the customers who bought 16GB Moto G units with IMEI numbers that began with 3533, as these were

Motorola said that the problem was one-off

the units that were most likely facing issues. Motorola also disclosed that the problem was "one-off" and that it had taken measures to ensure that the error didn't recur.

HTC sells 50k One (E8) units within 15 mins of launch

HTC One (E8) sold over 50,000 units within just 15 minutes of its launch in China. The mid-range smartphone has generated a huge interest in the public with over two million people "reserving" the device at a large online retailer.

The HTC One E8 has the same specs as the HTC One M8, including the Snapdragon quad-core 2.5GHz processor and Android v4.4 Kitkat out of the box. It has a 5-inch LCD display and comes with a plastic body. HTC has eliminated the duo cam and aluminum body of the M8 to make the device cheaper.

It has a 13MP rear camera with autofocus and LED flash as well as a 5MP front camera for video calling. The smartphone has 16GB/32GB on-board storage expandable up to 32GB via microSD card. Connectivity options included are 4G LTE connectivity, Wi-Fi and GPS/GLO-NASS. The smartphone packs a 2600mAH battery and is available in Polar White, Maldives Blue, Electric Crimson and Misty Grey colors.

The One E8 doesn't have the metal construction and the Ultra-Pixel duo camera of

34 **Web watch**
This time we take a look at "moonshot thinking" and other updates that have affected the web scene.

36 **App watch**
Following the FIFA World Cup has never been easier. And these apps will make it so much better, it's almost criminal.

Mobile watch

HTC One E8 saw a substantial drop in price

HTC's flagship M8, but that has reduced the price of the device to $450 (approximately), which makes it about half the price of One M8 and other devices in its class, including the Galaxy S5.

After a substantial revenue drop in the month of May, HTC seems to have realised how to gain profit over the next coming months.

The HTC One E8 is expected to debut in India in July. The price of the smartphone has not been announced yet, but it is speculated that HTC may price the phone below ₹30,000 in India to compete with other mid-range smartphones. .

HTC One X's struggle with Wi-Fi death grip issues

Since its launch, a few unfortunate owners of the HTC One X have complained of Wi-Fi and/or display issues, and while a software update has fixed most of the connectivity problems, some users still report a Wi-Fi death grip issue.

Similar to the iPhone 4's infamous voice and data death grip issue, the alleged issue affecting certain HTC One X devices is documented on XDA Developer's site, as the "HTC One X Wi-Fi antenna loose connection

fault", with model numbers HT23 and HT24 the most common identified problem-dealing handsets. We've also heard that the HTC One X units manufactured in Taiwan are the only ones facing the problem, not the handsets manufactured in China, though statistics have yet to back up that claim.

Unlike Apple and its stance on the iPhone 4's problems, however (where Jobs had told customers to hold the phone correctly), HTC has acknowledged the issue, and is reportedly keen on addressing it, based on user feedback.

Acknowledging the issue is half the problem solved

Affected users with the One X under warranty can freely claim a replacement. Right now, an XDA Developer member called 'Bigoliver' has reportedly posted a hardware fix to the problem, a relatively complicated method that includes tape and soldering.

The unit we received for our review of the HTC One X faced no such problem.

Aakash 2 – Made in China?

Controversies have continued to chase India's ambitious ultra low-cost tablet PC, the Aakash 2. According to reports on

the web, the 'revolutionary' device aimed at bridging the digital divide in the country is actually a cheap 'Made in China' device, and has been embellished with some applications from IIT Bombay. Questions are being raised whether the Aakash 2 is a true Indian innovation.

Economic Times, in its report, claims that DataWind – the company assigned to design, develop and manufacture the Aakash tablet – procured about 12,000 A-13 model devices designed by AllWinner Tech of China. The supplier was finalised by IIT-Bombay, which is also implementing the Aakash project. The report says that the procurement took place shortly before the Aakash 2 was officially launched.

The Chinese tablets cost about $42 (around ₹2,310) per unit, and were purchased from firms such as Kalong Technology Co., Ltd, Dasen International Electronics Co Ltd, Trend Grace and Shenzhen Shetong Zhaoli Co Ltd. The report points out that IIT-Bombay issued a certificate dated 29th October for importing 20,000 units in India, and sought a waiver of duty as they were meant for school students under an HRD ministry programme – days before the Aakash 2 was launched.

Read more at: http://dgit.in/aakashchina

Datawind procured 12,000 devices designed by AllWinner Tech in China

Google to launch Apple CarPlay rival

Google announced the launch of its Google Auto Link (GAL) at the Google I/O developer conference in San Francisco in June. Google's Auto Link system is the first product developed in partnership with the Open Automotive Alliance – a group of companies including Audi, Honda, General Motors, Hyundai, chipmaker NVIDIA Corp and Google.

The Auto Play OS competes with Apple's CarPlay in-car operating system

Google's Auto Link software is not an "embedded" system but a "projected" one, meaning that smartphones using Google's Android operating system could be controlled using a car's own controls and display screen.

Google itself is quite familiar to many drivers from existing interfaces. Hyundai drivers already use an inbuilt Google search engine and voice commands to find nearby destinations and Audi drivers can use Google Earth satellite images for its GPS maps. Apart from Auto Link, Google is also planning to develop new Android platform features, which, the company says will, "enable the car itself to become a connected Android device".

The Auto Play OS competes with Apple's CarPlay in-car operating system unveiled at this year's Geneva Motor Show. Apple's Car Play interface resembles the iPhone and has several in-car functions. d

E-Commerce vs. Brands:
A serious conflict?

Brands recently released advisories against buying products on popular e-commerce sites. How does it impact the e-commerce segment? What does the e-commerce industry think? And most importantly, what does it mean for us buyers?

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Earlier this year, brands such as Lenovo and Toshiba warned customers against purchasing their products from e-commerce sites such as Snapdeal, Flipkart and Amazon India. The companies in their advisories said that Snapdeal, Flipkart and Amazon India are not the authorised resellers of their products. Recently, Gionee also released a similar advisory, warning not to purchase their products from any online retailers.

Such advisories from the companies, stressing on not buying products from e-commerce sites, come amid a wide push to the e-commerce segment in India. Most of the e-commerce sites are heavily focussing on electronic gadgets including smartphones and tablets. In fact, ASSOCHAM's paper on "Online Shopping - Review & Outlook in 2013" says electronic gadgets market was the third largest contributor to the e-commerce growth in India.

Therefore, advisories against e-commerce sites certainly creates a state of confusion, and to some extent discourages online shopping. We analyse the stand of these companies.

Let's take a look at the statements from Lenovo and Toshiba on the issue:

"What we have noticed in the past few months is that some of these sites, and largely due to a marketplace kind of a set up, there are a lot of resellers that have cropped up, which are selling at very low predatory prices. These we believe may or may not be an authorised or genuine products," Sudhin Mathur, Director, Smartphones, Lenovo India is quoted as saying.

"Toshiba India does not have any direct arrangement with e-commerce websites, and they are not authorised to represent about the quality or fitness of any Toshiba-branded product," said a Toshiba in a statement to The Hindu.

Interestingly, camera giant Nikon had issued a similar statement last year:

To buy, or not to buy, that is the question

"Please note that e-commerce websites like Flipkart (Flipkart Internet Private Limited) and Snapdeal (Jasper Infotech Private Limited) are not our authorized partner/dealer in India, we advise you to check the warranty entitlements while buying from online portals."

Creating panic?

Though advisories from these brands seem to protect customers' interests, it certainly creates a state of confusion.

"The advisory issued by smartphone brands is definitely in the interest of consumers. But we oppose the smartphone brands' stand because through this action they are alienating an entire channel and creating a certain amount of panic. A forum needs to be created between online retailers, offline retailers and brands to address this particular issue," says Mehul Jobanputra, CEO and Co-Founder of DesiDime.com.

As pointed out earlier, brands have especially cautioned customers about 'warranty' when purchasing their products online. However, e-commerce sites have categorically said that they sell genuine products which are eligible for warranty.

In an interaction with Digit, a Snapdeal spokesperson said: "Snapdeal.com is an online marketplace where authorized sellers list their products on the platform. We take utmost care to list products only by those sellers who have the necessary authorization to sell these products. These authorized sellers already selling offline are the ones listed on our site and are selling Lenovo and Gionee products online through our platform. Customers can rest assured that all the products including Lenovo and Gionee products which are available on Snapdeal.com are genuine and eligible for warranty. Further, being an online marketplace, the pricing decision solely lies with the seller listing the product."

"The concern regarding the warranty of products sold is warranted. A consumer will be a repeated customer of the brand when he/she feels that the brand is assuring him/her of the product quality. So we completely support the concern raised for the warranty of products sold online. After sales service is as important

as the pre sale service," says Mehul Jobanputra, Desidime, on warranty issues.

Just a gimmick or are they actually serious?

Brands discouraging customers to buy their products from e-commerce websites is understandable to some extent. Online stores usually offer products at lower price as compared to physical stores – a key feature that's been driving the e-commerce sales in India.

That said, these brands have spent massively on setting up distribution and channel partners across the country. Physical stores in India have taken a huge hit due to the surge in online sales. It certainly appears to be one of the main reasons for brands asking users not to buy products from e-commerce websites.

"It may be hurting the brands to a certain extent. But it is also giving them access to newer customers who may or may not have brought their products in the first place," opines Jobanputra.

Formal tie-ups: perhaps an unlikely solution?

Trend of exclusive tie ups has picked up of late. The Flipkart-Motorola exclusive tie-up for Moto G and Moto E smartphones certainly gives a peek at the way e-commerce may evolve with ever-changing customer preferences. Formal agreements, however, are a a different matter, because smartphone companies look to put a check to the huge price discrepancies between products sold online and offline.

What this means is that e-commerce sites will, by tying up, be agreeing to sell at a brand-decided cost, which means they can't offer products cheaper than other online/offline stores, and thus lose the advantage of offering a good deal. Also imagine if you were getting the same product at the same price online as you would at your local store, why would you buy online, wait for delivery, hope you get the right product, hope it works, etc., when you could walk over to the corner shop and walk away with a perfectly good product for the same price?

In conclusion

First and foremost priority should be protecting customers' interests. While smartphone companies have to acknowledge changing customer preferences – who have greater inclination towards online research and shopping and comparison, e-commerce web sites have to address the warranty concerns by educating customers and by prominently display warranty and service related information.

As a user, since e-commerce web sites are a dime a dozen, you need to research more carefully before buying; this includes reading through user reviews, asking for information about manufacturer warranty and service, and checking the credibility of the website or seller (in case of an online marketplace).

Obviously we will be here to help you through this as well, so remember to use our Forum (digit.in/forum) and our various social networking channels to get in touch with us and the rest of the Digit community to safeguard your own interests.

Sssh...They're listening

Did the Indian government access Vodafone's network to intercept calls, text messages and emails? While the telecom department examines Vodafone's disclosure report, the issue of users' privacy has once again come into the limelight

Vodafone's latest Law Enforcement Disclosure report has triggered a new controversy as it reveals India to be among 29 countries that sought access to its network for intercepting calls, text messages and emails. Telecom Minister Ravi Shankar Prasad has directed the Department of Telcom to examine the report and assured an appropriate follow up thereafter.

Vodafone's report, however, doesn't reveal the precise number of requests or whether it complied to any request.

As per the Law Enforcement Disclosure report, "...in every country in which we operate, we have to abide by the laws of those countries which require us to disclose information about our customers to law enforcement agencies or other government authorities, or to block or restrict access to certain services. Those laws are designed to protect national security and public safety or to prevent or investigate crime and terrorism, and the agencies and authorities that invoke those laws insist that the information demanded from communications operators such as Vodafone is essential to their work."

"Refusal to comply with a country's laws is not an option. If we do not comply with a lawful demand for assistance, governments can remove our licence to operate, preventing us from providing services to

The Govt. of India may have accessed your private date

our customers. Our employees who live and work in the country concerned may also be at risk of criminal sanctions, including imprisonment. We therefore have to balance our responsibility to respect our customers' right to privacy against our legal obligation to respond to the authorities' lawful demands as well as our duty of care to our employees, recognising throughout our broader responsibilities as a corporate citizen to protect the public and prevent harm."

This latest disclosure about the government's attempts at spying on its citizens has triggered a nationwide debate over issues related to users' privacy. It's notable that all the major Internet companies including Google, Twitter, Facebook and Yahoo periodically release transparency reports, featuring figures on requests made by the governments of all the countries.

The disclosure report also outlines the Indian laws on interception of calls and text messages. India's Section 69 of the IT Act permits "authorised government officials to intercept or monitor information transmitted, generated, received or stored in any computer. Accordingly, the service provider is required to extend all technical facilities, equipment and technical assistance to the authorised government officials to intercept the information and to provide information stored in the computer. The Interception Rules lay down the procedure to be followed by the government to authorise such interception or monitoring".

Malicious World Cup-themed apps targeting Android users

The 2014 FIFA World Cup in Brazil kicked off on May 12th, and Trend Micro researchers have pointed out yet another trend that fans need to be careful about: fake and malicious versions of World Cup-themed apps.

One of the malware families detected is ANDROIDOS_OPFAKE.CTD. Accordig to Trend Micro, this particular family first appeared in May 2013, impersonating popular apps. Its malicious routines included subscribing the user to premium services, leaking user-critical information (such as contact list/messages) as well as installing malicious links and shortcuts on the mobile device's home screen. In just one year, the number of detected ANDROIDOS_OPFAKE.CTD variants reached 100,000, fake 14,707 apps.

Another malware family detected that was leveraging the World Cup fever was the ANDROIDOS_SMSSTEALER.HBT family. Variants of this family shared similar methods of fraud and fakery with OPFAKE, with one exception: the former can connect to its remote C&C server to receive and

Malicious World Cup slot game app

Wraith '14
The Rolls Royce Wraith 2014 launched with some sleek awesomeness that only an autophile would appreciate: **http://dgit.in/wraith14**

If Earth stopped spinning
Ever wondered what would happen if the earth stopped spinning? Check out this video which explains it all
http://dgit.in/EARTHstopspinning

Security watch

execute commands – such as adding an SMS filter (to block/conceal certain incoming messages), sending SMSes and installing new malware.

Affected users of a new variant detected as ANDROIDOS_OPFAKE.HTG – typical Premium Service Abuser – find themselves charged with exorbitant fees for premium services that they themselves never purchased.

Trend Micro revealed that it has already found more than 375 questionable or outright malicious World Cup-themed apps, and more are sure to be spring up until the sporting madness continues.

"The vast majority of these apps lurks from third-party app stores, so users are advised to avoid them altogether or be extra careful when reviewing apps they want to install from them. Installing a mobile security solution is also a good idea," said Dhanya Thakkar, Managing Director, India & SEA, Trend Micro.

Feedly, Evernote struck by DDoS attacks

In a bid to extort money from major online services, cyber criminals have increased the intensity of their DDoS (Distributed Denial of Service) attacks lately. RSS reader and feed-synching platform Feedly and popular note-making service Evernote are among the latest victims of such attacks. Some other recent victims of DDoS attacks include Meetup, Basecamp, Vimeo, Bit.ly, Namecheap, Plenty of Fish and Moz.

The frequency of such attacks has increased since DDoS attackers have discovered new and more powerful methods of attacks by exploiting insecure internet

NTP-style DDoS attacks are quite powerful

protocols like NTP (Network Time Protocol). If such attacks had happened last year, they would be considered a great achievement in terms of exploiting IP security.

The recent attack on Meetup was one of the NTP DDoS attacks, which took the company's website and accompanying mobile services down for several days. Online security experts say that the NTP-style attacks are far more powerful than traditional DDoS attacks.

Heartbleed continues to haunt

A recent report from Portuguese security researcher Luis Grangeia revealed that the Heartbleed bug can be used over Wi-Fi to enable new kinds of attacks.

The new line of attack has been dubbed "Cupid" and performs the Heartbleed procedure over Wi-Fi instead of the web, either by pulling data from enterprise routers or using a malicious router to pull data from Android devices as they connect. The attacker is able to view snippets of the working memory from the targeted device, exposing user credentials, client certificates or private keys.

Grangeia has also published a proof of concept for the bug and has urged vendors and

administrators to upgrade their devices.

Grangeia says that EAP-based routers are most vulnerable to the attack and require both, an individual login and a password found commonly in wireless LANs. The cyber attacker could use Heartbleed to pull a private key from the router or authentication server, evading any security measures. He added that the attack could only target devices using Wi-Fi, limiting the potential threats. The Heartbleed virus attacks Android devices running Android Jelly Bean v4.1.1.

Heartbleed attacks Jelly Bean v4.1.1. phones over Wi-Fi

"This particular variant of the attack might be slower to close," Grangeia says, "But it should not be nearly as widespread as the original bug, since the universe of vulnerable devices is lower."

Services such as OpenSSL and TLS are vulnerable to the

Cupid virus. "The web and email are the biggest users of [TLS], but by no means the only ones" says Columbia professor Steve Bellovin, "Any unpatched implementations are at risk from Heartbleed." He added that most modern systems have updated to a Heartbleed-proof version of OpenSSL, but some access points continue to remain unpatched.

Security researchers have also found new bugs in the web encryption software that caused the malicious Heartbleed cyber threat. These new vulnerabilities in OpenSSL, experts say, would allow hackers to spy on communications, but aren't as serious a threat as Heartbleed.

The new bugs were discovered by the group which released an OpenSSL update containing seven security fixes. Experts recommend that websites and technology firms that use OpenSSL technology should install the update on their systems as quickly as possible. However, these companies must first test their systems to ensure that they're compatible with the update.

"They are going to have to patch. This will take some time," said Lee Weiner, senior vice president with cyber security software maker Rapid7.

OpenSSL technology is used by major tech giants including Amazon.com, Yahoo, Facebook and Google. Thousands of tech products from companies, such as Cisco Systems Inc, HP, IBM, Intel Corp and Oracle Corp also use the OpenSSL technology.

The Heartbleed bug surfaced in April this year and was used by cyber hackers to steal large quantities of data without leaving a trace. The bug allows attackers to gain access to users' passwords and make phishing attempts.

To the Moon and back

Researchers are working on bringing high-speed Internet to the Moon. Read this and more stories in this month's Web Watch

Shooting lasers at the Moon for high-speed Internet

If the unavailability of Internet was the only thing keeping you from visiting the Moon, then here's an important update for you: Researchers from the Massachusetts Institute of Technology's (MIT) Lincoln Laboratory in co-ordination with NASA will demonstrate a new data communication technology that provides broadband-like connectivity for transmitting data to and from earth.

The technology will be demoed at the Conference on Lasers and Electro-Optics , scheduled to be held in July in California, US. The team will provide details and an overview of the on-orbit performance of their laser-based communication uplink between the Moon and Earth, which has reportedly surpassed the previous record transmission speed by 4,800 times.

"This will be the first time that we present both, the implementation overview and how well it actually worked," said Mark Stevens of MIT Lincoln Laboratory. "The on-orbit performance was excellent and close to what we'd predicted, giving us confidence that we have a good understanding of the underlying physics," Stevens added.

The MIT team had last year shown that their Lunar Laser Communication Demonstration (LLCD) transmitted data between the Moon and Earth at a download rate of 622 Mbps per second – said to be faster than

any radio frequency system. The team also managed to transmit data from Earth to the Moon at 19.44 Mbps per second, 4,800 times quicker than the best RF uplink ever used.

"LLCD also demonstrated the ability to 'hand-off' the laser connection from one ground station to another, just as a cellphone does a hand-off from one cell tower to another. An additional achievement was the ability to operate LLCD without using LADEE's radio at all," read a statement from NASA last year.

"Communicating at high data rates from Earth to the Moon with laser beams is challenging because of the 400,000km distance spreading out the light beam," Stevens said. "It's doubly

Data can be sent between the Moon and Earth at a download rate of 622 Mbps per sec

difficult going through the atmosphere, because turbulence can bend light – causing rapid fading or dropouts of the signal at the receiver," said Stevens.

To ensure smooth signal over such a massive distance, the team used several techniques to accomplish error-free performance over several optical

challenging conditions in both, dark and bright conditions. A ground terminal, set up at New Mexico, uses four separate telescopes to send the uplink signal to the Moon. Each telescope is about 6 inches in diameter and fed by a laser transmitter that sends information coded as pulses of invisible infrared light.

Twitter now allows animated GIFs

Twitter now supports animated GIFs on its desktop and mobile (Android and iOS) platforms. The GIFs won't play automatically and users must press a play button accompanied by the animated images or just click on the tweet to view them.

The company made the announcement via a tweet to demonstrate the animated GIFs: "Starting today, you can share and view animated GIFs," Twitter wrote in a June tweet, which was accompanied by a GIF showing a man holding a cute fluffy dog with the caption "GIFs got me like."

Twitter is also rolling out support for its API that will allow third-party developers to offer similar support in their client applications. Several other social networks and blogging sites like Pinterest and Tumblr already offer support for animated GIFS. However, social network giants Twitter and Facebook have been the exceptions. Facebook has decided not to allow GIFs on its site because it reportedly believes that they'll make the News Feeds very chaotic.

Twitter recently introduced a feature that allows users to embed tweets within new tweets. The new feature will make tweets appear more streamlined. The functionality has been rolled out only for Android and iOS devices

The GIFs won't play automatically

for now and isn't available for desktop users. The micro-blogging site has made no comment on whether the feature will be launched on more platforms.

Twitter has also launched hubs for tracking the FIFA World Cup 2014. Then there's a new sign-up form that gives users the ability to choose their team's flag as their profile image. Users will also get access to scoreboards for each game as well as custom timelines for each individual match.

Google partners with Twitter for public disaster alerts

Google's Public Alerts service will now incorporate tweets from disaster-struck locations. If a public disaster alert from sources such as the National Weather Service is issued, it will include relevant tweets in

Tweets will be sourced from Twitter's public API

Google Now, Search and Maps, as well as on Google's Public Alerts website.

Google says that the aim of this collaboration is to have the public's tweets help answer questions – such as "are schools closing?" "Are neighbors evacuating?" "What are people seeing on the front lines of a storm?" – in emergency situations. The feature is currently being rolled out in English-speaking regions. The internet giant says that it's also working on adding "new kinds of social content to other products and geographies in the future."

Once partners in 2011, both companies have faced issues in the past with Twitter once describing Google's decision to integrate Google+ into search results as "bad for people". This decision could be a small, but significant step in bringing Twitter data back into Google products. A Google spokesperson stated that the tweets are sourced from Twitter's public API and not from its "firehose," or real-time data stream. Twitter declined to comment on the news.

Google's satellite fleet to benefit remote areas
Internet giant Google is planning to spend over $1 billion on satellites that will bring Internet access to regions that still don't have connectivity. The project is expected to start with 180 "small, high-capacity satellites" that will circle the earth, according to a Wall Street Journal (WSJ) report.

WSJ says that Google's drones will circle at a lower altitude than traditional drones. The projected price ranges of the project will be $1 billon to more than $3 billion depending on the network's final design. Google may later double the number of satellites, depending on the project's success.

Greg Wyler, founder of satellite-communications startup O3b Networks Ltd is leading Google's satellite venture. According to reports, Google is also hiring engineers from satellite company Space Systems/Loral LLC to work on the project.

Google has earlier experimented with designing high-altitude helium balloons to provide broadband service to remote parts of the world. Recently, the internet giant acquired Titan Aerospace, which builds solar-powered drones to provide internet connectivity. A Google spokesperson said that the company is focused

Internet connectivity significantly improves people's lives. Yet two-thirds of the world have no access

on bringing hundreds of millions of additional people online. "Internet connectivity significantly improves people's lives. Yet two-thirds of the world have no access at all," she said.

Facebook has also been working on its own satellites, drones and lasers to bring internet to remote parts of the world. The social network has hired aerospace and communications experts from NASA's Jet Propulsion Lab and its Ames Research Center for its new "Connectivity Lab" project. Both the companies intend to bring more people online and ultimately gain more users who can bring in new revenue sources.

Follow the 2014 FIFA World Cup on your smartphone and tablet

As the much-awaited football tournament kicks off later tonight, here's our list of must have apps across Android, iOS and Windows Phone to follow the FIFA World Cup round the clock.

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Unless you've been living under a rock for the past month or so, you couldn't have missed the steady buildup towards the FIFA Football World Cup on social media, news websites, radio and television. As the much-awaited football tournament kicks off later tonight, here's our list of must have apps across Android, iOS and Windows Phone to follow the FIFA World Cup round the clock. A simple search for these names on the respective App Stores should get you the right apps.

1 FIFA - Official app

A great starting point on your quest to stay clued into the 2014 Football World Cup is to download the official FIFA app, which promises to give you all the latest news updates, game highlights, video interviews and in-depth features of every game and team participating in the FIFA World Cup in Brazil. One cool feature of the app is "Global Stadium" which lets you pick any of the 64 matches and get live, minute-by-minute update of the action. This app is also great if you're looking for exclusive content from the FIFA World Cup, something that won't be licensed out to any other media partner.
Free download – Android, iOS
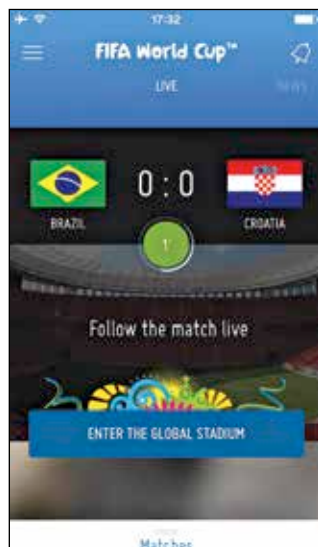
2 Liv Sports app

If you didn't know this already, Sony LIV has the official rights to broadcast the FIFA World Cup 2014 in the Indian subcontinent, and this is their official app which is available on Android and iOS platforms. After installing the app on your smart device, go forward to create a login profile for using the app. You need to buy the entire FIFA World Cup tournament viewing pack to be able to enjoy live HD streams of the games on your smartphone or tablet, and we highly recommend you do the same – as it only costs Rs. 120, which is very affordable if you come to think of it. Alternatively, if you just want to catch the live matches of any particular team, go ahead and do just that for just Rs. 60. Real-time stats and commentary to all the games are also provided within the LIV Sports app.
Free download – Android, iOS

3 ESPN FC Soccer and World Cup app

Probably the most comprehensive coverage you could ever get in one single app related to the FIFA World Cup 2014. This app is built on and fuelled by the extensive reporting and coverage by ESPN's staff and football experts present not in Brazil – where the current world cup is hosted and kicks off later tonight – but also from around the world. Through this one app, you stand to get news, reviews, features, opinions, and exclusive video from

the football world cup. Not just that, but everything you've come to expect from ESPN's brand of football and sport coverage on the tele you'll get more than just a glimpse of that through this app for all the events related to the FIFA World Cup staged in Brazil.
Free download – Android, iOS

4 BBC Sport app
The BBC does a very good job of keeping track of football news from around the world, with insightful analysis and features. Coming in just in time before the FIFA World Cup kicks off later tonight, the fully dedicated BBC Sports app just received a facelift and some key enhancements that make it a great app to have around on your device to track the 2014 FIFA World Cup on your smartphone or tablet. Live coverage of the 31 matches that BBC has

the rights to broadcast will be covered in the app. Apart from highlights, custom alerts, this app is also powered by World Cup Breakfast, a special programme available for offline viewing which recaps the past night's games through BBC football pundits.
Free download – Android, iOS, Windows Phone

5 Univision Deportes - 24x7 live streaming app
One of the best ways to catch continuous live streams of all the football world cup action is to install this app on your Android or iOS device. The app is rated very highly and vouched by football fanatics who just want to livestream a football game onto their Android phone or tablet or iOS device. Not only does this app promise to give you live stream

of every FIFA World Cup game, but it also seemingly claims to provide the capability to rewind livestream – awesome! Its only drawback is the app is designed in Spanish, but in the age of Google Translate that's an easy caveat to work around.
Free download – Android, iOS

6 Onefootball Brasil - World Cup app
Made by a company based in Berlin, this is a cool, nice-looking app for you to install on your Android, iOS or Windows Phone device and stay up-to-date with all the happenings of the FIFA World Cup 2014. The app does one thing very well, which is to let users pick a favourite team. Once that's done, the app automatically creates a list of customized feed (with articles, videos, social updates, etc) around that team with push notifications

and updates to keep you constantly informed about their fortunes at the football world cup. Apart from match schedules, the app also includes real-time game commentary, player profiles, and tournament updates.
Free download – Android, iOS, Windows Phone

7 Forza Soccer / Football app
If you're one of those who doesn't have enough football crazy friends in real life, and are contemplating how to enjoy the FIFA Football World Cup in grim isolation, you've got nothing to worry. We have you covered with the Forza Soccer / Football app, which is slightly different from all the apps we've covered so far. Apart from giving you live match updates from every game at the football world cup, and other bells and whistles around the games, the Forza app also has a forum for fan polls and opinions. After every game, you can rate a team's, player's or manager's performance, and see how you perform in terms of others who rate and assess similar teams and players. It promises to be a lot of fun and give you some much-needed virtual engagement and feeling part of a shared brotherhood of football fans around the world who're using and interacting with the same app.
Free download – Android, iOS

Digital life

YouTube fame and fortune

40 Want to gain fame like iJustine and NigaHiga? Of course, you do! Then you have to read our guide to setting up your YouTube channel

PS vs XBOX vs GPU
The age-old debate rekindles this year. Would you go for the Playstation 4, XBOX One or a top-of-the-line graphic card? **http://dgit.in/xbops4gpu**

Sony Walkman NWZ-W273

Anyone who said the good ol' MP3 is dead obviously didn't budget in the fact that you can't take most smartphones for a lap in the swimming pool. Which is what the Sony W273 Walkman series MP3 player promises to do! It's waterproof up to 6 feet of submersion, and has a cool wrap-around design that makes it look like a very funky pair of earphones, nothing more. But don't be fooled by its minimalistic, chic design, as the W273 houses 4GB of storage space and the capacity to store up to 900 songs. Enough for a month's worth of swimming, and then some.

Waterproof gadgets to pwn the monsoon like a boss

SolarJOOS

If you're off to trekking in the misty cool monsoon climes, pray how do you plan on charging all your gadgets while on the road? Worry not, for we have just the thing for you -- SolarJOOS, a portable solar charger that you can carry along wherever you go to ensure your tablets, smartphones, GPS devices, and more are always on and functioning. What's more, since it's designed to be used in the great outdoors, this bad boy comes fitted with a watertight, waterproof enclosure that ensures all the solar plates and its internal batteries are sealed from any kind of moisture. The thing is also capable of functioning in 100% humidity, but fat chance of viewing the sun (and recharging its juice) if that ever happens.

Nikon 1 AW1

Remember how everyone tries to ninja their smartphones or cameras on the first hint of rainfall, to avoid the devices from getting spoilt? Say goodbye to all of that. All you shutterbugs out there who want to capture the myriad shades of rain and monsoon in still pictures and videos, you have to get yourself the new Nikon 1 AW1, claimed to be the world's first waterproof, shockproof and freezeproof mirrorless camera with interchangeable lenses. Supporting high speed shooting modes, this Nikon camera can withstand water submersion up to a depth of 15 metres. Rain can't put a dampener on that now, can it?

Kyocera Hydro Elite

With so much of our world gravitating around our smartphones, we can't have them get exposed to moisture and humidity and go belly up in the monsoon now, can we? Sure, there's the Samsung Galaxy S5, Sony Xperia Z2, and several other smartphone cases that claim to waterproof your handset, but how can you beat a smartphone that's advertised by none other than Bear Grylls? This phone, the Kyocera Hydro Elite, is shown to be waterproof by none other than Discovery Channel's most avidly reckless adventurer. Nothing else compares. Not even its specs matter! Time to grab this and jump down a waterfall in a rainforest. Feeling lucky, punk?

Panasonic Toughbook CF-19

As far as a fully functional mobile computer (in other words a laptop) that you can carry around in extreme weather and temperature, including rainfall, it just doesn't get any better than the Panasonic Toughbook. This beast of a laptop is fitted an enclosure that's tested on US military standards, designed to protect its sensitive electronics innards from dirt, dust, grime and even water. That's right, the Toughbook CF-19 isn't water submersible, but it is spill and splash proof. Forget rainfall, but even if you were to use it as a shield against someone trying to drench you in a jet of water through a water gun on Holi, this laptop should be just fine. Not a dent or a drip. Amazing, isn't it?

Set up your very own
YouTube Channel

Want to gain fame like iJustine and NigaHiga? Of course, you do! Hidden gems follow...

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YouTube plays host to more than just teenagers with a cameraphone, catering to more than a billion visitors with content provided by media giants such as Time Warner, Disney and others – who've taken to it as a means by which to influence their viewers.

The power of video can do wonders. In this article, you'll learn how to use the tools on YouTube to move to the other side of the video equation – from being a passive viewer to being an active distributor.

Set up your channel

The first step to establishing your online dominance on YouTube is to create an account. If you already have a Google account then you're already set, as it automatically registers you when you sign on to YouTube for the first time. Otherwise you can easily register from YouTube's main page. By creating an account you've now started owning a "Channel".

A YouTube Channel is that part of the website where you can view, manage and monetise your content. The Channel page also includes access to your online profile, which is how viewers find you and your content.

Along with the channel name you'll also be given the option of selecting a category in which you want the channel to be placed. Once you've submitted a user name (fingers crossed that it isn't already taken), you'll now have the web address for your Channel – www.youtube.com/<username>. The current YouTube interface has a fluid step-by-step guide explaining the layout and options on the screen.

Manage your page and dashboard

Now that you've successfully set up your account, channel name and web address it's time to work on attracting an online audience. To entice users to subscribe to your channel, rather than simply watching single clips, you'll need to customise your channel to make it look unique. Using YouTube's dynamic layout guide you can add a banner image (recommended size is 2560x1440 and under 2 MB). You'll also find the options to add a background and avatar image for your Channel here.

YouTube's pop-up suggestions will easily get you through the design part of the page so we'll skip ahead to the things that matter – like the Dashboard. This is located at www.youtube.com/dashboard. Over here, the panel on the left gives you a clear overview of your channel's activities.

The Dashboard becomes very useful once you've begun uploading and sharing videos. It lets you make quick changes such as replacing the Channel Art, adding web links and describing your channel. You can also view all the key statistics of your videos in the form of line graphs showing popularity, view counts, subscriber info and other analytical data.

Under the Video Manager tab of the Dashboard, you'll be able to see thumbnails of your uploaded videos with basic information, along with viewers' comments. Under the Channel tab, there's an option for you to monetise your content thanks to the YouTube Partner Programme. This partnership program between content creators and YouTube has led to many millionaire "YouTube Stars" as well as many others who are able to make
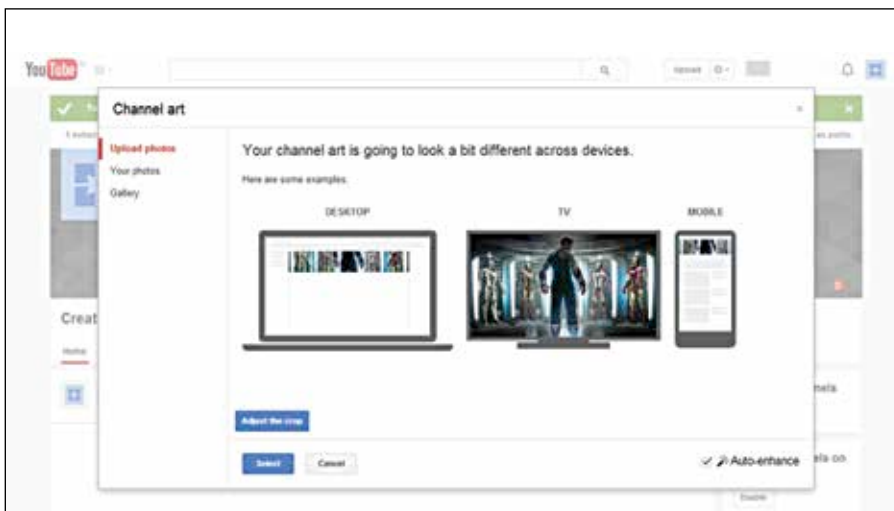
You can upload your own images as Channel art
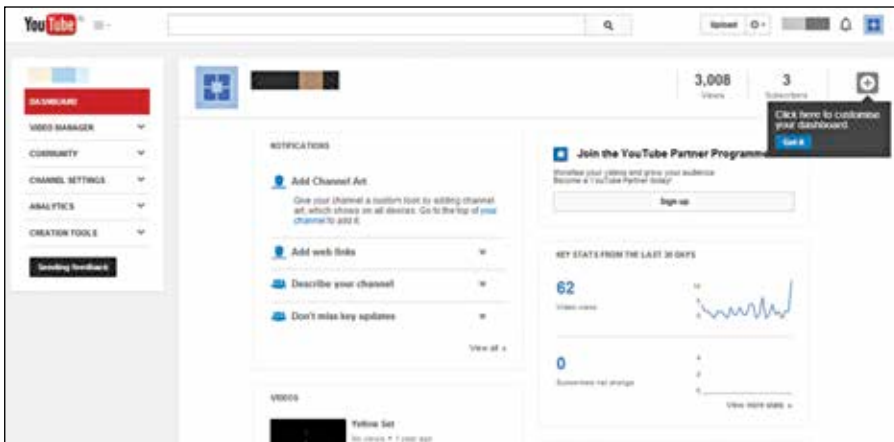
Get well acquainted with your YouTube Dashboard

a decent living earning money from the views gained on their channels.

Make money like a YouTube star

The YouTube Monetisation Agreement allows the video sharing site to place ads on your channel using Google's AdSense Programme, with the average revenue rate at around $5 per 1,000 ad views. However, this can vary depending on the balance of views, likes and other factors. The creator is usually given a share of 45-55 per cent. While the split may seem fair, it takes many ad views on each video for any real money to start rolling in, so be prepared for a long wait.

Create content for your channel

This is where you decide what your You-Tube Channel is going to be about? Will it be footage related to video games, dances, band performances, educational videos and/or tutorials? There's really no limit to

what you can put on your channel, but if your goal is to generate a large number of views then humour, gaming, technology and movie related content is the way to go.

If you're making your own videos, you won't need high-end equipment but if special effects and 3D are involved, you'll obviously need more than a cell phone camera. For most digital videos, however, a mid-ranged DSLR camera with video features or a Full HD handycam is more than enough. In either scenario, it's what you shoot and show with the equipment that will win you much of your audience. Even webcam videos have gone on to garner millions of hits (remember Numa Numa?).It also helps to have a sturdy and portable tripod for stability and clarity.

With these two investments, half your equipment is ready. The second half of your kit is a computer with a good video editing software such as Final Cut Pro, Adobe Premiere Pro or Avid. But lacking those, you can even consider using YouTube's built-in browser-based editing platform. It's not

fully loaded like the software mentioned, but it will get the job done in most cases. You can find this tool at `Dashboard > Create > Video Editor.`

Score more views

With millions of videos competing for attention even great clips go unnoticed by viewers. Here are a few simple steps you can take to improve your videos' visibility and virality:

*   To make sure your videos pop up when someone searches with keywords related to your content, use all the popular keywords associated with your content.
*   Suitably title the video, fill out the description in detail and add relevant tags.
*   Place videos in the right category with privacy set to "Public".
*   Have a 100 per cent complete profile.
*   Interact with the community on other channels.

So if we had a video for this article, the Title would be "How to Set up a YouTube Channel". The description would explain all the topics covered in the video along with links to Digit Magazine's website and social media pages. The tags would have keywords such as YouTube, Tutorial, Channel and Digit Magazine, and it would be categorised under Education or Technology.

You can also help your video's popularity by sharing the video's URL on other related and popular YouTube pages (no spamming!), social media sites, and by interacting with the online community in general. Once that's done, the only thing left to do is let nature or YouTube take its course. All the best!

Sci-Tech

Space age
SpaceX has achieved a lot in its
decade since inception. Find out
exactly what and how they did it.

46

Anti-fall Jyrobike
Falling is no longer part of the learning
curve while trying to learn to ride a bicycle
http://dgit.in/1qA83T7

Who's Mind Is It Anyway –
Is Artificial Intelligence Here?

Now that a machine has finally passed the Turing Test what does it mean for the world of AI?

Samir Alam
readersletters@didgit.in

The system has you. From the first mobile update in the morning to the closing sliver of light from under a laptop lid at night – you are cocooned in a gilded prison you cannot smell or touch or taste. A prison run by sentient electrons travelling at the speed of light, invisible, patient and inevitable – what some may call artificial intelligence. A bit too dramatic? Perhaps. But is it really that removed from the not so distant future?

I, Eugene Goostman

The idea of artificial intelligence and the hopes and fears that are associated with its rise are fairly prevalent in our common subconscious. Whether we imagine Judgement Day at the hands of Skynet or egalitarian totalitarianism at the hands of V.I.K.I and her army of robots – the results are the same – the equivocal displacement of humans as the dominant life forms on the planet. Some might call it the fears of a technophobic mind, others a tame prophecy. And if the recent findings at the University of Reading (U.K.) are any indication, we may have already begun fulfilling said prophecy.

In early June 2014 a historic achievement was supposedly achieved - the passing of the eternal Turing Test by a computer programme. Being hailed and derided the world over as being either the birth of artificial intelligence or a clever trickster-bot that only proved technical skill respectively, the

programme known as Eugene Goostman may soon become a name embedded in history. The programme or Eugene (to his friends) was originally created in 2001 by Vladimir Veselov from Russia and Eugene Demchenko from Ukraine. Since then it has been developed to simulate the personality and conversational patterns of a 13 year old boy and was competing against four other programmes to come out victorious.

The Turing Test was held at the world famous Royal Society in London and is considered the most comprehensively designed tests ever. The requirements for a computer programme to pass the Turing Test are simple yet difficult - the ability to convince a human being that the entity that they are conversing with is another human being at least 30 percent of the time. The result in London garnered Eugene a 33 percent success rating making it the first programme to pass the Turing Test.

The test in itself was more challenging because it engaged 300 conversations, with 30 judges or human subjects, against 5 other computer programmes in simultaneous conversations between humans and machines, over five parallel tests. Across all the instances only Eugene was able to convince 33 percent of the human judges that it was a human boy. Built with algorithms that support "conversational logic" and open-ended topics, Eugene opened up a whole

new reality of intelligent machines capable of fooling humans. With implications in the field of artificial intelligence, cyber-crime, philosophy and metaphysics, its humbling to know that Eugene is only version 1.0 and its creators are already working on something more sophisticated and advanced.

Love in the Time of Social A.I.s

So, should humanity just begin wrapping up its affairs, ready to hand over ourselves to our emerging overlords? No. Not really.

The ghost in the shell

Despite the interesting results of the Turing Test, most scientists in the field of artificial intelligence aren't that impressed. The veracity and validity of the Test itself has long been discounted as we've discovered more and more about intelligence, consciousness and the trickery of computer programmes.

In fact, the internet is already flooded with many of his unknown kin as a report by Incapsula Research showed that nearly 62 percent of all web traffic is generated by automated computer programs commonly known as bots. Some of these bots act as

social hacking tools that engage humans on websites in chats pretending to be real people (mostly women oddly enough) and luring them to malicious websites. The fact that we are already battling a silent war for less pop-up chat alerts is perhaps a nascent indication of the war we may have to face – not deadly but definitely annoying.

A very real threat from these pseudo-artificial intelligence powered chatbots was found to be in a specific bot called "Text-Girlie". This flirtatious and engaging chat bot would use advanced social hacking techniques to trick humans to visit dangerous websites. The TextGirlie proactively would scour publicly available social network data and contact people on their visibly shared mobile numbers. The chatbot would send them messages pretending to be a real girl and ask them to chat in a private online room. The fun, colourful and titillating conversation would quickly lead to invitations to visit webcam sites or dating websites by clicking on links - and that when the trouble would begin.

This scam affected over 15 million people over a period of months before there was any clear awareness amongst users that it was a chatbot that fooled them all. The highly likely delay was simply attributed to embarrassment at having been conned by a machine that slowed down the spread of this threat and just goes to show how easily human beings can be manipulated by seemingly intelligent machines.

Intelligent life on our planet

Its easy to snigger at the misfortune of those who've fallen victims to programs like Text-Girlie and wonder if there is any intelligent life on Earth, if not other planets but the smugness is short lived. Since most people

are already silently and unknowingly dependent on predictive and analytical software for many of their daily needs. These programmes are just an early evolutionary ancestor of the yet to be realised fully functional artificial intelligent systems and have become integral to our way of life.

The use of predictive and analytical programmes is prevalent in major industries including food and retail, telecommunications, utility routing, traffic management, financial trading, inventory management, crime detection, weather monitoring and a host of other industries at various levels.

Do you think I pass the Turing test?

Since these type of programmes are kept distinguished from artificial intelligence due to their commercial applications its easy not to notice their ephemeral nature. But lets not kid ourselves - any analytical program with access to immense databases for the purposes of predicting patterned behaviour is the perfect archetype on which "real" artificial intelligence programs can be and will be created.

A significant case-in-point occurred amongst the tech-savvy community of Reddit users in early 2014. In the catacombs of Reddit forums dedicated to "dogecoin", a very popular user by the name of "wise_shibe" created some serious conflict in the community. The forums normally devoted to discussing the world of dogecoins was gently disturbed when "wise_shibe" joined in the conversation offering Oriental wisdom in the form of clever remarks.

The amusing and engaging dialogue offered by "wise_shibe" garnered him many fans, and given the forums facilitation of dogecoin payments, many users made token donations to "wise_shibe" in exchange for his/her "wisdom". However, soon after his rising popularity had earned him an impressive cache of digital currency it was discovered that "wise_shibe" had an odd sense of omniscient timing and a habit of repeating himself. Eventually it was revealed that "wise_shibe" was a bot programmed to draw from a database of proverbs and sayings and post messages on chat threads with related topics. Reddit was pissed.

Luke, Join the Dark Side

If machines programmed by humans are capable of learning, growing, imitating and convincing us of their humanity - then who's to argue that they aren't intelligent? The question then arises that what nature will these intelligences take on as they grow within society?

Technologist and scientists have already laid much of the ground work in the form

of supercomputers that are capable of deep-thinking. Tackling the problem of intelligence piece meal has already led to the creation of grandmaster-beating chess machines in the form of Watson and Deep Blue. However, when these titans of calculations are subjected to kindergarten level intelligence tests they fail miserably in factors of inferencing, intuition, instinct, common sense and applied knowledge. The ability to learn is still limited to their programming.

In contrast to these static computational supercomputers more organically designed technologies such as the delightful insect robotics are more hopeful. These "brains in a body" type of computers are built to interact with their surroundings and learn from experience as any biological organism would. By incorporating the ability to interface with a physical reality these applied artificial intelligences are capable of defining their own sense of understanding to the world. Similar in design to insects or small animals, these machines are conscious of their own physicality and have the programming that allows them to relate to their environment in real-time creating a sense of "experience" and the ability to negotiate with reality. A far better testament of intelligence than checkmating a grandmaster.

The largest pool of experiential data that any artificially created intelligent machine can easily access is in publicly available social media content. In this regard, Twitter has emerged a clear favourite with millions of distinct individuals and billions of lines of communications for a machine to process and infer. The Twitter-test of intelligence is perhaps more contemporarily relevant than the Turing Test where the very language of communication is not intelligently modern - since its greater than 140 characters.

The Twitter world is an ecosystems where individuals communicate in blurbs of thoughts and redactions of reason, the modern form of discourse, and it is here that the cutting edge social bots find greatest acceptance as human beings. These so-called socialbots have been let loose on the Twitterverse by researches leading to very intriguing results. The ease with which

these programmed bots are able to construct a believable personal profile – including aspects like picture and gender – has even fooled Twitter's bot detection systems over 70 percent of the times.

The idea that we as a society so ingrained with digital communication and trusting of digital messages can be fooled, has lasting repercussions. Just within the Twitterverse, the trend of using an army of socialbots to create trending topics, biased opinions, fake support and the illusion of unified diversity can prove very dangerous. In large numbers these socialbots can be used to frame the public discourse on significant topics that are discussed on the digital realm. This phenomenon is known as "astroturfing" – taking its name from the famous fake grass used in sporting events - where the illusion of "grass-root" interest in a topic created by socialbots is taken to be a genuine reflection of the opinions of the population. Wars have started with much less stimulus. Just

How much compute power does functioning AI need?

imagine socialbot powered SMS messages in India threatening certain communities and you get the idea.

But taking things one step further is the 2013 announcement by Facebook that seeks to combine the "deep thinking" and "deep learning" aspects of computers with Facebook's gigantic storehouse of over a billion individual's personal data. In effect looking beyond the "fooling" the humans approach and diving deep into "mimicking" the humans but in a prophetic kind of way - where a program might potentially even "understand" humans.

The program being developed by Facebook is humorously called DeepFace and is currently being touted for its revo-

lutionary facial recognition technology. But its broader goal is to survey existing user accounts on the network to predict the user's future activity. By incorporating pattern recognition, user profile analysis, location services and other personal variables, DeepFace is intended to identify and assess the emotional, psychological and physical states of the users. By incorporating the ability to bridge the gap between quantified data and its personal implication, DeepFace could very well be considered a machine that is capable of empathy. But for now it'll probably just be used to spam users with more targeted ads.

From Syntax to Sentience

Artificial intelligence in all its current form is primitive at best. Simply a tool that can be controlled, directed and modified to do the bidding of its human controller. This inherent servitude is the exact opposite of the nature of intelligence, which in normal circumstances is curious, exploratory and downright contrarian. Man made AI of the early 21st century will forever be associated with this paradox and the term "artificial intelligence" will be nothing more than a oxymoron that we used to hide our own ineptitude.

The future of artificial intelligence can't be realised as a product of our technological need nor as the result of creation by us as a benevolent species. We as humans struggle to comprehend the reasons behind our own sentience, more often than not turning to the metaphysical for answers, we can't really expect sentience to be created at the hands of humanity. Computers of the future are surely to be exponentially faster than today, and it is reasonable to assume that the algorithms that determine their behaviour will also advance to unpredictable heights, but what can't be known is when, and if ever, will artificial intelligence attain sentience.

Just as complex proteins and intelligent life found its origins in the early pools of raw materials on Earth, artificial intelligence may too one day emerge out of the complex interconnected systems of networks that we have created. The spark that aligned chaotic proteins into harmonious DNA strands is perhaps the only thing that can possible evolve scattered silicon processors into a vibrant mind. A true artificial intelligence.

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To Infinity and Beyond

SpaceX and Elon Musk's will to conquer space

SpaceX has achieved a lot in its decade since inception. Find out exactly what and how they did it.

Samir Alam
readersletters@digit.in

There is nothing conventional about Elon Musk and his multibillion dollar empire. Unlike most young twenty-something millionaires of the '90s tech boom, Elon Musk didn't disappear in the midst of champagne and supermodels when he sold his stake in Zip2 for USD 307 million dollars in 1999 or PayPal to eBay for USD 1.5 billion dollars in 2002. It just wasn't enough to quench Musk's thirst for success. So instead of retiring like any sensible 31 year old with hundreds of millions of dollars to his name, Elon Musk figured he would take on the two biggest challenges which had the potential to revolutionise the world - electric cars and cheap space travel. Sounds easy enough, right?

Dreams of Apollo
The 1960s was a decade for dreams. Amidst a climate of political confusion, international war and cultural revolution the human race made astounding progress. The decade gave rise to the Green Revolution, industrial robotics, satellite broadcasts, computer games, programming language, the internet, electronic photography, space travel and so much more. Space travel in particular overshadowed every other innovation as it captured the imagina-

Look again at that dot. That's home. That's us.

tion of billions. And after the momentous achievement on July 20th 1969 when humans first stepped on the Moon, everyone knew the world would never be the same.

But the dream ended too soon with the 14 December 1972 Apollo mission to the

The Dragon spacecraft on its way to the ISS

Moon. Since then the reaches of the lunar surface and the void beyond has been left abandoned by humanity.

The drive to colonise the Moon, travel to Mars and launch interstellar expeditions has been drowned out by the sounds of warfare for decades. It was perhaps destiny that in June 2002 - Elon Musk launched SpaceX promising the world that he could make space travel cheaper, faster and more reliable over time. And he delivered.

As NASA retired the Space Shuttle program it still needed to deliver cargo, equipment and other essential supplies to the International Space Station. As the bidding over this lucrative opportunity opened up, major players like Lockheed Martin and Boeing (together known as United Launch Alliance) were considered the obvious choice. But SpaceX pulled the

rug from under them and was awarded the USD 1.6 billion resupply contract to launch 12 missions.

That works out to a cost of about USD 57 million per launch on its Falcon 9 rockets. This may seem like a lot but considering that the average pre-2011 cost quoted by the ULA is about USD 380 million dollars per launch and the 2014 Russian Soyuz charges USD 70 million per trip, its not surprising that NASA chose SpaceX. But its not just about ferrying cargo for SpaceX, that is only the beginning.

SpaceX has done that which very few companies in its industry do – innovate. Instead on relying on outside suppliers for parts, models and designs, SpaceX decided to cut out the middle man and manufacture them in-house. By opting out of the traditional business systems for the aerospace industry, SpaceX effectively turned it on its head.

Being willing to risk his own money and reputation Elon Musk was able to demonstrate that the paradigm could be broken. And as he stepped over its shattered remains he wasn't shy in proclaiming that SpaceX just wasn't a company that would make space launches cheaper for cargo but was ultimately concerned with making human space flight an affordable reality. To do that would be a whole other challenge – to create a human rated spacecraft.

Father of Falcons, Dreamer of Dragons
SpaceX charges USD 5511 per kilogram to transport something to orbit. This remarkably low price even beats out their cheapest international competitors – the

SpaceX's 5.2m fairing – designed in-house by SpaceX – undergoing testing in the world's largest vacuum chamber at NASA Glenn Research Center

Chinese – and leaves big players like the ULA in the dust. The technology behind this well hidden, with no public patents or

We have lift off

any records to hint at their innovation. But it does have a brand name – the Falcon rockets and the Dragon space vehicle.

The Falcon rocket series include the Falcon 1 and the Falcon 9 variants built to sustain a whole new fuel management system, materials use and avionic systems. Within six years of the first prototype testing SpaceX had a successful Falcon 1 test flight in September 2008, becoming the first privately built liquid fuel spacecraft to reach orbit.

While the Falcon 1 was an expendable launch system and was retired after it successfully achieved its first commercial mission of delivering the Malaysian RazakSAT satellite to orbit in September 2009. The sights were now set on the Falcon 9 rocket which was not only human-rated, but also far more powerful and cheaper than any rocket engine in history. Having effectively solved the means

With the ability to lift into orbit over 53
metric tons, the Falcon Heavy is the
world's most powerful rocket

to reach orbit and carry tremendous cargo
the only thing left for SpaceX was to build
a spacecraft that would use these rockets
– Enter the Dragon.

The Dragon spacecraft developed by
SpaceX is currently the only active reus-
able vehicle in existence. Its first launch
was aboard the Falcon 9 rocket in De-
cember 2010, and became the first com-
mercial built and operated spacecraft to
successfully make it to orbit and back.
And just two years later, the next itera-
tion of the Dragon space vehicle docked
with the International Space Station in
May 2012 to make it to the record books
once again. Within ten years of its crea-
tion SpaceX crossed milestones that had
never before been reached by independ-
ent start up aerospace companies, and
taken decades for larger government
funded corporations. And they're just
getting started.

Mars Colonial Transporter, Boarding Soon

As American and international govern-
ments, private agencies and institutions
book their travels on SpaceX's Falcons
and Dragons the company remains in a
constant siege of innovation. With the
release of the Dragon V2 in June 2014
– a reusable vehicle capable of hosting
seven astronauts – NASA hopes it will
be the replacement to the Space Shuttle.
As further developments and additional
features are engaged on the Dragon V2
in the coming months, NASA hopes that
manned missions would begin by 2017-
18, but SpaceX and Elon Musk have their
sights set a little farther - Mars.

The idea of the Mars Colonial Trans-
porter is Elon Musk's personal dream
project and it pulls no punches. The
goal is simply to transport humans and
equipment to Mars using SpaceX's next
generation reusable rocket systems –
the Heavy Falcon - and the advanced
human-rated launch vehicles – the
successors of the Dragon V2. So far the
development of the large rocket engine
required for a Mars mission has already
begun at SpaceX but isn't expected to
be functional within the Mars Colonial
Transporter project until 2024.

But given SpaceX and Elon Musk's in-
domitable desire to break all boundaries it
isn't a far stretch to expect the upcoming
Falcon 9 variants and Heavy Falcon rocket
designs to be just the tip of the iceberg

This nice infographic tells you all you need to know about the Falcon 9. 9 enines burn for
180 seconds generating a thrust of 5,885 kN at see level

when it comes to future projects. With pre-
liminary designs already set up to be up to
nine times larger than anything that they
already have in existence. Already touted
as the biggest commercial rocket engine
to ever be designed, the Mars Colonial
Transporter will be capable of transport-
ing over 100 tonnes of cargo all the way to
Mars. With dreams of a much bigger even-
tual design, fit for a passenger manifest of
up to 80,000 people at just USD 500,000
per seat - the MCT will be the medium by
which humanity would colonise Mars.

Some might not believe that all the
resources and expense towards space
travel is a waste. But we believe that
the future is above us and our scientific
and technological achievements are
just as important a barometer of our
cultural aspirations as social welfare.
It's worth remembering that just over
a hundred years ago electricity was
nothing more than a novelty, an elusive
trick, dismissed as nothing worth much
to humanity. But it has gone on to shape
every facet of human thinking, culture
and existence. Good technology makes
life interesting, great technology rein-
vents life.

Ultimately, the journey to Mars and
the far reaches of space isn't just a mat-
ter of money. There is something deeper
to SpaceX's enterprise, more lasting and
ennobling about their desire to make the
heavens our backyard. To create a future
where the reality of walking on alien soil
isn't the private reserve of millionaires
and rockstars but the willful right of
all human beings. Isn't space after all
the final frontier? To make our world
infinitely larger as we further our quest
to fulfill our destiny as citizens of the
cosmos. The commitment to the dream
makes SpaceX an interesting and hope-
ful experiment to watch. ◀

worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

(MUST READS)

HARLEY-DAVIDSON'S FIRST ELECTRIC MOTORCYCLE DOESN'T SUCK APPARENTLY

At least that's what Wired had to say about the latest entrant into the electric motorcycle domain. For a company that has long been known for rumbling V-twin engines and the open road, the "LiveWire" is a pretty neat ride. Find out why and how:

http://dgit.in/hdlivew

SOLAR FREAKING ROADWAYS!

Chances are you've seen the "revolutionary" concept video somewhere on your timeline or WhatsApp groups by now. The concept is simple – replace every tarmac road in the world with smart solar panels and effectively solve every global crisis including world hunger. Of course we exaggerate, but you can guess we've been sceptical of the concept's feasibility from the start. Here's the definitive outlook on why it will never work:

http://dgit.in/solarfreakin

HOW TO ANONYMIZE EVERYTHING YOU DO ONLINE

This nifty guide tells you how to use everything from encryption to TOR to hide your activities online. It covers email, browsing, instant messaging, mobile devices, file transfers and everything else. A must read:

http://dgit.in/beanon

[The Verge Corner]

VIRTUAL REALITY PANIC

Have we learned anything from the VR freakout that happened over 20 years ago? Find out why the hell everyone is freaking out over VR. http://dgit.in/vrfreak

Mozilla developing Chromecast killer
Traditionally Mozilla is never far behind Chrome. But now with still no sign of Mozilla's smart TV offerings, there are encouraging reports that indicate the company is planning another move into the living room. Follow the link to find out what it has to offer.
http://dgit.in/mozcast

Project Loon
About a year ago Google unveiled Project Loon – what it was calling its "latest moonshot" out of the Google X labs. This story stream at The Verge tells you all you need to know about Google's quest to bring internet to the world with a fleet of balloons.
http://dgit.in/looneyG

Portable, bullet-resistant wall
Some things just seem too implausible. This one might smell of science fiction but not if the US Military has its way. DARPA has plans to make portable cylinder that can blow up into a nearly impenetrable wall! Why? Well why not?
http://dgit.in/bulltprof

THE INSCRUTABLE HUM

A mysterious sound is driving people insane – and nobody knows what's causing it. It can cause everything from headaches to sleep deprivation and thousands of people have heard it with reports go back as far as the 1830s. Follow the link for more on this scientific mystery:
http://dgit.in/tehhum

AN IMPOSSIBLE GAME MADE POSSIBLE

No Man's Sky features a procedurally generated open universe meaning everything you see is in some way crafted at random by a computer in real time. The trailer evokes one emotion, "Wow, how is that even possible?" Kotaku tries to answer that question:
http://dgit.in/opnuniv

GRAVITY'S STRENGTH STILL AN OPEN QUESTION
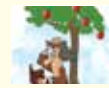
You might expect that all these years after Newton, we might have a good measure of his gravitational constant, G. As it turns out – going by a recent study – mankind still doesn't know how strong gravity really is.
http://dgit.in/Ngravit

BEND IT LIKE BECKHAM

It happens every four years: players carefully line up free kicks, take aim – and shoot. A row of guys jump up covering the two most precious things they possess. Then the ball goes awry and everyone blames either the "new" ball or the player. Know the science behind how a ball swerves:
http://dgit.in/benditlikeb

iOS 8: 13 important features

Apple showed off iOS 8, the latest version of its mobile OS at the WWDC conference early last month. Here's everything you need to know about it.

– By Nikhil Pradhan

At the conference, Apple execs such as CEO Tim Cook and Senior VP Software Engineering, Craig Federighi, revealed new features such as actionable notifications, improvements to messaging and the keyboard and a greater focus on developers. While there was no word on an exact date when iOS 8 would come to iPhones and iPads, it is expected to go live in August or September of this year. Apple has also revealed that iOS 8 will come to the iPhone 4S and all iPhones that were launched thereafter, the iPad 2 and all iPads launched thereafter (including the iPad Mini) and the iPod Touch 5th generation.

Let's take a look at the most important features of iOS 8 that were talked about at WWDC:

Interactive Notifications or Widgets

Widgets have finally come to iOS. In iOS 8, you can now perform actions on notifications directly without exiting the app you're currently in. For example, if you're using the Facebook app and you get a noti-

fication about a message, you will be able to reply to the message from the notification pop-up itself. Currently, actionable notifications will be available for messages, calendar, reminders, mail and certain third party apps like Facebook. Other third-party developers will also be able to add actionable notifications for their apps.

Shortcut to Contacts

You will now see photos of your recent and favourite contacts on the multi-tasking screen (accessed by pressing the home button twice). You can tap on each contact to make a call or send a message.

New features in Mail

Apple has taken pointers from popular third-party email apps like Mailbox and Triage, and introduced a new set of features in its default mail app. These include the introduction of swipe gestures to mark an email as read or flag it for later action. The app will also automatically recognise dates, addresses, phone numbers and flight reservation details in emails so that you can add them to your calendar/phone book with a single tap.

New keyboard

The iOS 8 keyboard will predict your next word as you type based on your previous usage, and offers suggestions. You will also be able to install and use third-party keyboards, a feature that is very popular among Android users. Adaptxt, a keyboard app for Android that offers contextual pre-

dictions, from Keypoint Technologies of India, is one of the third party apps that is already scheduled to launch for iOS 8.
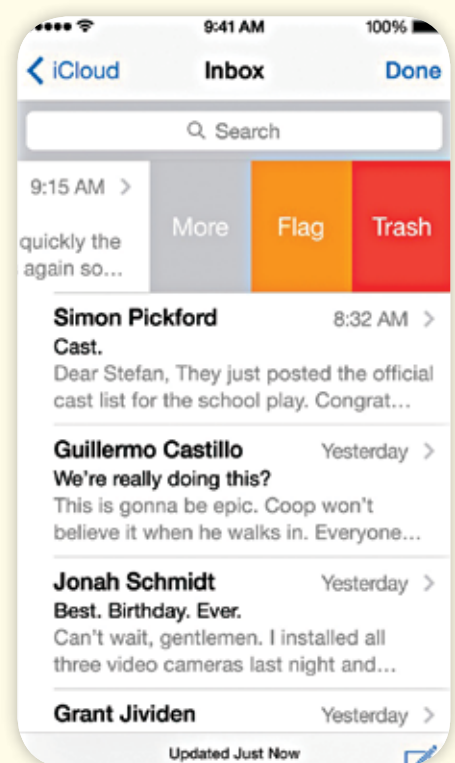
iCloud Drive

iCloud Drive is similar to existing services like Dropbox and Google Drive and can be installed on Windows 8 PCs and OS X machines. Doing so will let you access all files saved on iCloud on any device and work on them with the apps of your choice

THE DARK SIDE OF COGNITIVE ENHANCEMENT

Cognitive performance enhancers or "smart pills" promise to deliver a better version of ourselves. But what if such enhancement becomes a socially and legally enforced responsibility? Could these things be as common as Coffee, Aspirin and Combiflam in time?
http://dgit.in/smartpl

IT'S OFFICIAL: THE INTERNET IS FULL

With the Americas running out of IPv4 addresses the internet is really getting full. There are currently fewer than 17 million IPv4 addresses remaining. Where did all those IP addresses go? Find out in this ArsTechnica deep dive into the subject:
http://dgit.in/ipfull

NOW THIS IS SOME KNOCKOUT DISCOVERY

According to researchers at the University of Utah, human faces evolved to be punched by human fists. The bones here are more robust for protection against repeated impacts by small objects like the human fist.
http://dgit.in/knockp

LIFE ON BITCOIN

Are you still using flimsy paper money that crumples up in your pocket? If so you haven't embraced Bitcoin. Or maybe as GQ believes you haven't quite understood how to get it. GQ gave writer Marshall Sella some hard cash and asked him to blow it on all the pleasures that Bitcoin can buy. Here's what he did:
http://dgit.in/bitcccn

New features in Messages

iOS 8 will enable you to add voice and video messages and location details from within the Messages app itself. You can also create groups within the Messages app and add or remove contacts from the groups.

Focus on Health

Apple introduced a new Health app for iOS 8 that can collate information collected on you by other apps and put them in one place for easy reference. Apple also introduced Healthkit, a new tool that developers can use to access your health data for use in their own apps or to communicate with the other health apps you have installed on your iDevice.

Photos

iOS 8 will get a new iCloud Photo Library that will save all your full resolution photos on the cloud and leave 'light' versions of them on your phone to save space. You'll also be able to search through your photos now based on date, time, location and album name of the photos. iOS 8 will also bring a number of photo editing tools and introduce time-lapse video recording that lets you capture a subject over a duration and watch an accelerated version of events.

Spotlight Search

Apple claims that it has improved the search tool inside iOS 8 and that now it considers context and location when delivering results. Instead of opening your browser, you'll be able to search for news, wikipedia pages, music and apps directly from the spotlight search tool.

Greater integration with Mac OS

Apple made it clear that it was focused on improving the integration between iOS devices and Mac machines. With iOS 8 installed on your iPad/iPhone and OS X Yosemite installed on your Mac (and provided you're signed into the same iCloud account on all the devices), you'll be able to start working on an email, browse a website or work on a file in Pages/Keynote/Numbers on either device and continue doing the same when you move to the other device. Your iPad and Mac will also be able to answer calls and receive messages if your iPhone is on the same Wi-Fi network.

Family Sharing

In iOS 8, you will be able to share stuff that you bought from iTunes and the App Store with six other people without needing to share your account details. Parents will also be able to approve a purchase made by a child on another device and the entire group (or 'family' as Apple calls it) will also be able to contribute to a single Family photo album. The 'Find my iPhone/iPad' feature has also been extended to the 'family' and family members will be able to help each other find their misplaced devices.

Developers, developers, developers!

Apart from the focus on integration between iOS and OS X, the big message of the WWDC conference was developer outreach. Apple stated that it has opened up 4,000 APIs in iOS 8 to enable developers to add more functionality to their apps. This includes the ability for developers of social networking apps to add their app as the default sharing destination, for developers of photo editing apps to add their tools and filters to the default camera app, among others. Apple also revealed Swift, a new programming language that, it claimed, made it easier to code apps and software for iOS and OS X. To know more about this aspect head on over to our devworx section on page 53.

Gaming

Apple also paid special attention to game developers by introducing three new game development tools: SpriteKit, for light 2D games; SceneKit, for casual 3D games and; Metal, for high-performance 'console'-level games.

TESTED

Adam Savage, and his gang of geeks check out amazing technology, unbelievable maker projects, engineering

JAMIE & ADAM
TESTED
EXPLORE. MAKE. TEST_

masterpieces, delicious food, magical special effects, and much more. Their videos can't really be put into any genre but if you are into geeky stuff you are guaranteed hours of entertainment.
http://dgit.in/wvtested

(QR Code)

For a list of all the links from this section, head over to http://dgit.in/wjuly2014 Or point your phone to the QR code above

(PRODUCT LAUNCHES)

AMAZON FIRE PHONE

With features like MayDay, Firefly, and Perspective 3D the Fire Phone packs a punch. Internally it's got a 2.2GHz Qualcomm Snapdragon 800 quad-core processor, and an Adreno 330 GPU and 2GB of RAM. All this under a 4.7-inch 1280 x 720 pixel LCD screen. Price: $650 for 32GB (₹40,000)

ASUS ROG GR8

Gr8 news for Steam machine fanatics! This little power performer from ASUS is just 2.5 liters in size. Inside it features a 4th Generation Intel Core i7 processor and GTX 750 Ti graphics card. It can output 4K and has Miracast support. Price not revealed yet.

THE LG G3

Say hello to LG's new Quad HD monster with a 5.5-inch screen. It has a 2.5GHz quad-core Snapdragon 801 processor, and 2 or 3GB of RAM (depending on model). The 13 MP camera has a dual LED flash and laser autofocus to go with it. Price: ₹61,000 (approx)

WORDJUMBLE

ABSOLUTE TIMEPASS

M	Y	A	E	M	M	O	C	L	A	U	Q	R	U	N	W	U	N	U	S
X	Q	W	H	B	E	X	L	Q	S	N	O	I	T	U	L	O	S	E	R
N	U	F	L	J	B	N	J	G	N	I	D	R	O	C	P	I	R	I	L
T	A	M	A	D	R	F	I	D	M	Z	I	C	Z	Y	C	N	M	I	B
N	R	R	E	P	O	S	I	T	O	R	Y	D	A	I	H	O	V	Q	Z
R	K	C	R	F	N	R	V	W	N	A	I	S	A	A	R	L	Q	E	S
C	E	M	P	Z	H	O	J	Z	T	A	K	P	E	N	E	P	T	Z	O
B	K	T	Q	R	I	T	I	P	R	T	R	J	G	O	D	Q	F	B	R
S	A	D	P	U	O	M	L	S	S	I	K	A	S	N	U	T	J	X	S
W	U	C	G	O	A	U	A	P	R	Z	W	I	U	Q	N	R	P	Y	B
X	Q	D	C	T	C	N	T	R	C	U	F	W	O	Q	D	K	V	H	Q
I	S	O	V	O	H	D	T	E	T	C	C	T	M	V	A	L	F	U	R
F	X	V	S	Q	I	C	A	U	R	U	Z	E	F	Z	N	D	E	Q	M
V	R	O	O	T	K	I	T	U	M	Y	D	G	R	J	C	R	S	M	V
C	O	M	E	H	V	C	F	H	Q	C	A	F	H	G	Y	O	H	T	Z

There are 18 technology-related terms in the grid alongside. Find them all. [Hint: they all start from either Q or R]

Top 3 YouTube Picks

Make sure your boss doesn't catch you goofing off with one of these videos playing on your screen
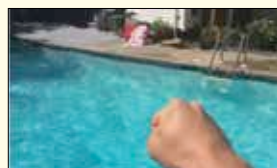
Splash trick
Duration: 0 min 6 seconds
Even with six second limit people have some really innovative videos on Vine. Here's one great example.
http://dgit.in/shrtvid

Recital fail
Duration: 1 min 0 seconds
When an amateur band comes on stage probably for the very first time it's a setup for an epic fail.
http://dgit.in/bndfail

Soccer samurai
Duration: 1 min 59 seconds
An ad for instant ramen has a guy dressed in a Samurai costume doing some insane football tricks.
http://dgit.in/ssamurai

iOS 8 SDK to bring a wave of changes to the platform

>>Apple announced the release of iOS 8 SDK at WWDC, the largest update so far consisting of 4,000 new APIs>

WWDC 2014 was held from June 2 to 6, 2014 at Moscone West in San Francisco. Apple claims that this was their biggest update so far since the launch of the App Store. The keynote focussed on OS X's latest iteration – Yosemite and iOS 8. Given that Apple has been ridiculously restrictive with what developers can do with their platform this was a much welcome change.

Things that popped out from amongst all the updates were mostly extensibility features like Notification Centre Widgets, third-party keyboards, Metal - a new graphics technology for the A7 chip, Swift - a new programming language and a bunch of frameworks suited for various categories of applications.

Healthkit is one of the new frameworks that have been included in the new release. It allows for health and fitness apps to communicate with each other and share data, thus, allowing for a more complete picture to be presented to the user. So if there are multiple apps, one handling your blood pressure and the other handling your vitals then the two apps can talk to each other and share data.

Homekit is a framework made in a similar fashion that is geared towards allowing apps that control home automation gadgets. Let's say you have one app for your doors, one for atmospheric control and another for lights then a fourth app could communicate with all of them and become a main control app that lets you fiddle with everything from just one place. Or you can simply use Siri to control everything.

The new A7 chip was introduced with a 64-bit instruction set that wasn't being utilised to its full potential. With iOS 8 Apple has introduced Metal, a graphics API that is touted to be

With 4,000 new APIs, the platform has become less restrictive

capable of enabling more draw calls. Other additions include Scenekit for 3D games and Spritekit for per-pixel physics and inverse kinematics.

A new programming language – Swift has been introduced as well. It is purported to help developers to write safer and more reliable code as compared to Objective-C. Playgrounds, a section in Xcode makes for instant display of your code's output. Touch ID APIs will extend the Touch ID authentication system to apps so you can add an extra layer of security to all new apps provided they are coded to allow the same.

Other new additions include:

- **Photokit** - allows developers to access the features of the built-in photo application with permissions to read and write to the Photos library.

- **Camera APIs** - opens up camera parameters like focus, white balance and exposure to third-party apps.
- **Cloudkit** - a solution to enable developers to skip writing server code so your apps can communicate with iCloud. Start with a 5GB storage space and 50MB for the database. Daily transfer limits is at 25MB/day for assets, and it scales with each additional user.
- **App Store features** - app previews, app bundles, free analytics and TestFlight for beta testing app prior to release.

The beta release of iOS 8 and the SDK has already been released to developers. iOS 8 is rumoured to have a launch date in September 2014 so you have plenty of time to start developing your apps. >

Swift is claimed to enable safer and more reliable code

Ruby on Rails - An introduction

>>One of the most popular languages currently is quite easy to get into after all it puts the user ahead of everything else.>

Before we get into understanding what Ruby on Rails is we need to know a bit about Ruby, the user friendly language that has taken the world by storm.

A little about Ruby

Ruby is a programming language created by Yukihiro Matsumoto in the 90's. The first version was officially released in 1999. It's similar to C and Java as they are all general purpose programming languages. Moreover, it is one of the most popular programming languages out there and most of it is because of the popularity of Rails.

So what's this Rails thingy?

Simply put, Rails is a software library. It extends Ruby and adds a lot more functions allowing for rapid development. It was created by David Heinemeier Hansson. In Ruby, each package, or library that extends the language is called a Gem. Rails is one such RubyGem. Rails enables conventions for allowing collaboration when building websites. All of these conventions are put together as the Rails API which has been documented extensively and has immense popularity online. With a huge community behind you can be assured that it'll be around for quite a long time. A significant portion of the community is made up of startups. This community comes together to improve Rails collaborating on standards so that complex sites can be developed rapidly.

Going about using Rails

Starting off with Rails is more about learning the conventions noted in its API since that is all there is to it. Rails brings together HTML, CSS and Javascript to create web applications that run on a web server. And as such due to the requirement of a web server, this language is considered to be server-sided or back end application development platform.

Basic concepts

With all programming languages, there is an underlying philosophy which guides the growth and popularity of the said language. Rails is no different.

1. Opinionated

With programming languages there are often multiple ways of going about programming an application. A non-opinionated language is one that doesn't direct you to program in a certain fashion. Take Perl as an example, there is no right way or wrong way of going about getting to your objective. So there will be approaches that may not be as efficient as others. Rails on the other hand is opinionated. There is a right way about programming in Rails and this helps reduce the

number of decisions one has to make along the way. Also, collaboration is made easier since everyone is following the same style of programming.

2. Convention over Configuration

This is simply why Ruby is described as opinionated. There are certain conventions that are followed strictly in Rails. In other languages if you were to create any method or function and describe all the variables, you'd have to specify each and every one of their data types and lengths. Ruby isn't completely devoid of this flexibility but it does make a few assumptions. If you were to create a model object in Rails and call it "User", then Rails will automatically assume it to be plural and save a database called "users" without the need for any extra configuration needed. This allows the programmer to spend more time on the main concept of an application rather than worry about the nitty gritty details which might throw a spanner in the gears.

3. Don't repeat yourself

Avoid duplicating your code. Not only does duplication make code more complex but it also makes it difficult to maintain and provides avenues for more bugs to creep into the code. This is not only limited to how your program but also to the development process as a whole. An example would be to use automated testing methodologies
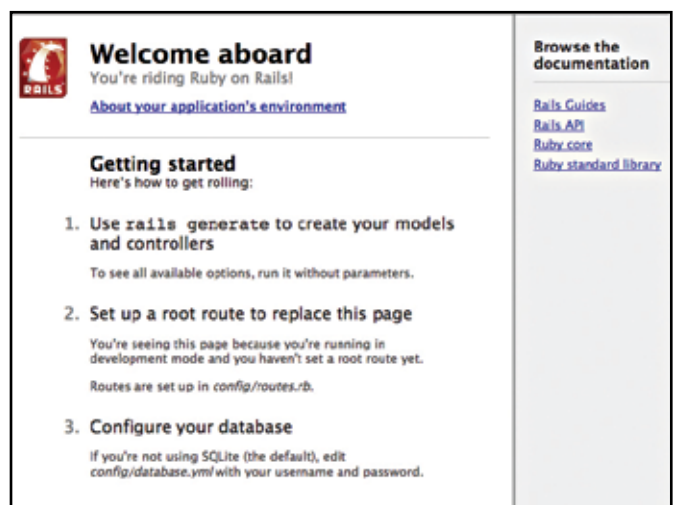
The first page you see when you test out a new web application

instead of manually testing each and every facet. DRY (Don't Repeat Yourself) is a really old philosophy is all about reusing code over and over again. Rails makes excellent use of the metaprogramming feature of Ruby to not only reuse code but also eliminated unwanted lines of code as and when possible. This makes for a really lean code for an application provided you know most of the API.

So, who all use Ruby on Rails?

We've mentioned earlier that Rails is popular among startups. But bigger companies aren't exactly shying away from it. Here are some of the most popular websites that use Ruby on Rails.

1. **Twitter**
   Everyone's favourite 140-character social website is largely built using Ruby on Rails
2. **Shopify**
   This service which allows you to build your own web store with minimal effort uses RoR to a great extent
3. **Crunchbase**
   A database which is all about startups, including companies, people and investors.
4. **Groupon**
   Coupons for everything! Caters to a plethora of stores across many countries
5. **Bloomberg**
   Most of their web applications are coded using Ruby on Rails

Starting off with Rails

1. Getting it all together

You'll need to download the latest release of Ruby. It comes with RubyGems packaging system. Also an installation of SQLite3 Database is needed since this is a server-sided language. Windows users can use RubyInstaller while Linux and Mac users can go with rbenv or RVM to install Ruby on their machines. Or on all platforms you can compile the code if that's how you roll.

2. Install Rails

Once Ruby is installed you need to install Rails. Simply open up the command prompt or Terminal app if you're using Mac OS. Check if the system path is proper by querying the ruby version by typing "ruby -v" without the quotes. The prompt should display your current installed version number, if not then add the path to the binaries in the system variables tab.

Now if Ruby is installed properly, move onto SQLite3. If you've downloaded and installed it properly then it too should appear in the path. Query the version to make sure it's installed properly by typing "sqlite3 --version" without the quotes in the command prompt.

If everything worked out fine then installing Rails is as simply accomplished by making use of the install command provided by RubyGems. The syntax is "gem install rails". Once it's done with
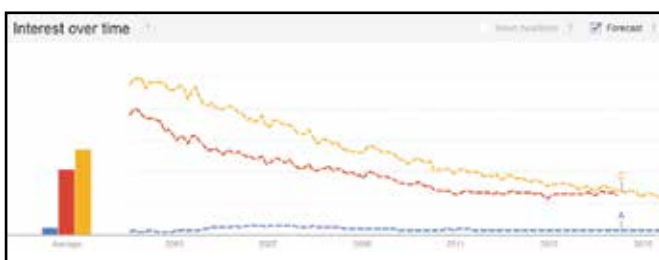
Blue - Ruby, Red - Javascript & Yellow - PHP trends over the years
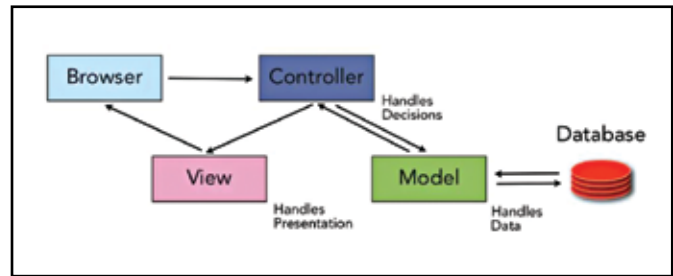
Ruby follows the Model-View-Controller pattern

query the version yet again using the command "rails --version". If you get a proper answer with the installed version number then you are ready to start developing in Rails.

3. Creating your first application

Rails has a lot of scripts called Generators which can be used to create the entire folder structure and download all the dependencies along with it. If you wish to create a blog application in rails then type in "rails new blog" to create a blog application. This is a fully functional application which you can access by getting into the appropriate folder. In this case it will be "blog".

4. Start a web server

Since Rails is a server-sided language you need a web server running on your machine to actually run your application. Rails has its web server called WEBrick that can be run using the command "rails server". Once the web server is up you can open any browser window and navigate to http://localhost:3000 to view your application. You should see a Welcome Aboard page which makes sure that everything needed (Ruby, Rails and SQLite3) is installed properly and is functional.

Model-view-controller

Rails follows the MVC pattern which is about breaking the application down into three distinct segments.

Models are the Ruby classes that talk to the database and perform business logic and does most of the work.

Views are what the users get to see. This means, HTML, CSS, XML, Javascript etc are all part of Views.

Controllers do the work of communicating between the user and the application like managing cookies, user requests and submissions.

Following this basic pattern allows easy collaboration since everyone who is working on the application knows roughly where each portion of the code is stored.

Resources

Learning Rails is all about getting to know the different conventions that are followed. To make the job easier (since it is quite simple to get started with), we've curated a list of some popular online tutorials that are free and also quite lucid.

1. Introduction to Programming with Ruby
   http://www.gotealeaf.com/books/ruby
2. Why's (Poignant) Guide to Ruby
   http://mislav.uniqpath.com/poignant-guide/
3. Learn to Program
   http://pine.fm/LearnToProgram/
4. Learn Ruby the Hard Way
   http://ruby.learncodethehardway.org/ >

>>Developing the right game for the right platform is key>>

>>We get an insight into mobile game development trends in India from Nitish Mittersain, Founder & CEO, Nazara Technologies>

By Mithun Mohandas

You entered into a partnership with EA in 2010 that ended in 2012. How was the experience and why wasn't the contract extended? We believe that you still are the sole distributor for EA games in Africa, are there plans to extend a similar service in other regions?

We are continuing to partner with EA in Africa and other regions including Middle East. In fact, around 3 months back we extended the contract for the Indian subcontinent including Nepal, Sri Lanka, Pakistan and Bangladesh. As a strategy, when we enter a new market, we reach out to partners like EA and obtain distribution rights when we feel the time is right. We will continue to invest in high growth and developing regions.

Does this partnership mean that you'll be developing lesser number of applications/games and moving to a solely publishing model?

We have a two pronged approach, our business can be largely categorized into two parts – the first one being a pure aggregation kind of a model where we liaise with developers like EA to get the distribution rights to publish their games. Secondly, there is also a lot of focus on in-house development, which can be further subcategorized into three segments:

- Developing content around acquired IPs, for example Chhota Bheem;
- Developing content around movies, like

Pyaar Ke Side Effects and Gulaab Gang;
- Creating in-house IPs. For instance, we are working on creating content around a new IP titled 'Little Birbal'

There is a lot of focus on developing games in-house but distribution is a core area for us, as it helps us grow stronger in the publishing business.

What are your opinions on payment models globally and which of those models do you believe would do great in a country like India?

One model which, at the moment is at a nascent stage in India and has huge potential to grow is the Freemium model. In the freemium model, the basic game is offered free of cost to the end user, and in case the user wants to unlock the premium features he pays for it. Although the model exists in India, it has not yet picked up and is sure to do well.

Secondly, these days the brands are increasingly experimenting with the way they reach out to their target audience. Realizing the potential of the growing smartphone and internet penetration, a lot of brand managers and marketers are investing in adver-gaming. While such games are a mode of entertainment for the end users, the theme essentially is around the brand or its new offering. Of course, in such scenarios the games are offered free of cost to the end user. This segment also opens up new vistas for game developers.

While we're on the topic of trends. Games like QuizUp seem to have struck a balance between knowledge and fun. The general trend is that such games don't do well when compared to "mindless" games. What did they get right which made the app so popular. Do you see such apps gaining popularity, is Nazara working on something similar?

Yes, the mobile gaming market is fast evolving to embrace games like Quiz Up. However, when it comes to deciding the theme of the game; our investments are primarily driven by the local market inclinations. India is a different market altogether where the mobile gaming market is still majorly led by casual gaming. For instance, India being a cricket obsessed country, any game around cricket; in all probabilities is expected to do well. Games like QuizUp are doing well but the market remains relatively small. Having said that, we are also moving towards the

edutainment domain developing games like 'Little Birbal'.

Why aren't there games from India that do well on a global scale? What we're asking is can India make the next Flappy Bird / Candy Crush / Fruit Ninja / Angry Birds? Why isn't it happening already?

I believe there is a huge potential in young developers in India to develop high quality games as well. We have been interacting with the young developers in the country; who often come up with great creative ideas. However the execution, development and distribution aspect, requires both awareness and investment, which seems to be low at the moment. We felt that it's our due responsibility to address these challenges and give platform to such young developers who have the potential and the creative ideas but lack direction and funding. We have incepted 'Games Fund' in this direction with a total budget allocation of ₹5 crore for the fund. We will invest ₹5 lakh to 50 lakh into a game or an idea of a company. We are committed to the developer community in India and assure that India's local talent will soon shine at the global level.

How many people do they employ? Developers, BAs, Testers etc?

We are an in-house team of about 25 people which primarily comprises of designers, producers and testers. While the major conceptualization and development of the games happens in-house, a lot of work is still outsourced. For instance, the porting of games is largely outsourced to ensure that the game is properly tested and ported across platforms and devices.

Do you develop natively for each platform or is a multiplatform IDE used?

We are increasingly moving from a platform centric to a seamless and multiplatform approach; but the approach is still a dual one; depending on the requirements. The ideation of the game and the core level development is done keeping in consideration that it is multiplatform; however, actual development might or might not be so. For instance, the time and effort required to develop a game for various platforms might be different, the Android version of a game might take lesser time and effort as compared to a Windows version, so developing the right game for the right platform is key.>

MAKING THE INTERNET OF THINGS
INTEL GALILEO: WHAT WILL YOU MAKE?

ntegrating the digital world into the physical world is THE NEXT BIG THING. In the near future, we will have billions of interconnected devices monitoring our health, factories, farms, forests, weather conditions, oceans and other natural and man-made resources. While all these monitoring devices will be connected to the Internet, most of them won't directly be used by people but networked to be controlled by computers, with much of the information being exchanged between machines directly and without any human involvement. It is estimated that more than 30 billion devices will be connected to the Internet of Things by 2020 monitoring health, daily activity, environment (to use resources more efficiently) etc.

With the evolution of the maker culture, such systems are being built by everyone and not just by people with specialized knowledge. The electronics maker community has widely used the Arduino platform for many projects. Makers have created projects such as tree climbing robot, auto plant watering system and even something like email/RSS notifier using the Arduino platform. Complicated projects need more processing power so developers interface multiple boards or interface boards to personal computers to increase processing power. For those unaware of Arduino, it is an Open Source electronics platform with easy-to-use hardware and software aimed at hobbyists, designers and anyone interested in creating interactive things using electronic hardware.

At the core, Arduino has a microcontroller (a small computer on a single chip containing a processor, memory and programmable input/output ports). Programming using the Arduino software is very simple because of the modified C programming compiler developed by Arduino developers, which can be used to write and upload code to the board. Thus, anyone capable of working out common logic problem can code using Arduino. The Arduino software works on Linux, Windows and Mac OS X platforms.

Arduino has many hardware add-ons called 'shields' that can be used directly with an Arduino board to simplify development. There are add-ons such as:
- GSM Shield (for GSM wireless connectivity)
- Ethernet Shield (for using Ethernet port to connect to internet)
- Wi-Fi Shield (to connect to internet wirelessly)
- Motor Shield (to connect DC, stepper motors etc. via L298 driver)
- Proto Shield (for prototyping of custom circuits)

EXTENDING GALILEO
THE PROBLEM

Most Arduino boards use an 8-bit AVR archi-tecture based microcontroller manufactured by Atmel. The fastest microcontroller used on Arduino runs at 16MHz. The only way of communicating with the microcontroller is by writing a sub-program to communicate over the serial interface. Such a sub-program will itself interfere with the execution of the main program, thereby reducing the speed of execu-tion of the main task.

Thus, these boards are suitable for per-forming small tasks and there arises the need to interface multiple boards together, distributing small chunks of load among individual boards.

THE SOLUTION

With increasing possibilities and hardware capabilities, makers now need hardware with greater computing power that can handle tasks efficiently reducing hardware complexity and footprint. Computer processor manufacturer, Intel comes to the rescue here with hardware by the name of Intel Galileo – a good step towards giving hardware hackers the capability to build the Internet of Things.

INTEL GALILEO SPECIFICATIONS

Named after the "Father of Modern Science", Galileo Galilei, Intel Galileo is a microcontroller board based on the Intel® Quark SoC X1000 Application Processor, a 32-bit Intel Pentium based x86 system on a chip running at 400MHz with 512KB SRAM that supports Complex Instruction Set Computing (CISC). It is the first Arduino compatible board built on Intel® x86 architecture designed for hardware and software pin-compatibility with various shields designed for the Uno R3 version of Arduino. The Galileo board uses the Arduino Software Development Environment for application development. Check these links for more info on the boards: http://dgit.in/galqark, http://dgit.in/galfull

In addition to compatibility with the Arduino, the Galileo board has several standard I/O ports used in the computer industry and features to expand its capabilities beyond the Arduino ecosystem such as:
- mini-PCI Express slot
- 100Mb Ethernet port
- Micro-SD slot
- RS-232 Serial port
- USB Host port
- USB Client port
- 8 MByte NOR flash on the board

The maker culture is a culture rep-resenting a technology counterpart of DIY culture. Makers are aligned to engineering-oriented activities such as electronics, robotics, 3-D printing and metal/woodworking. The culture stresses on innovation of newer appli-cations for betterment of society using available technologies. Using available skills practically to build systems is what makers do the best.

The Intel processor and I/O capabilities of the chip provide a highly capable product for students as well as the maker community. It will therefore be useful to advanced developers seeking a simple and cost effective develop-ment environment over the more complex Intel® Atom™ or Intel® Core™ architecture based designs.

The Galileo board is a freely available open source hardware design. Design schematics and other details are available for download, thus facilitating easy hacking if need be. A list of shields supported by Galileo and other documentation is available at http://dgit.in/intelcommunities

WHY GALILEO?

Intel Galileo combines the computing power of the Intel Quark processor with the simplicity of the Arduino platform. The Arduino platform enables anyone with the knowledge of C/C++ to program hardware. The Galileo platform combines the ease of Arduino's hardware capabilities with the power of a fully opera-tional Linux operating system. Many sketches (Arduino programs) written for Arduino boards can be ported over to the Galileo with little or no modification. All popular Arduino libraries dedicated to SD card, Ethernet, Wi-Fi, EEPROM, SPI and I2C/TWI devices are available along with access to the Linux OS on the board using system() function calls.

INSTALLING GALILEO
SOFTWARE

The software used to program the Galileo is the custom-tailored Galileo version of Arduino Integrated Development Environ-ment (IDE) and can be downloaded at http://dgit.in/intelcommunitiesdoc22226 for your operating system platform viz. Windows, Mac OS X and Linux.

ARDUINO INSTALLATION
Windows:
Unzip the downloaded file and open the file 'arduino.exe' in the extracted folder.
Mac OS:
Unzip application and move it into your Appli-cations folder. Open the 'Arduino' application.
Linux:
GUI: Extract the folder and open the file 'arduino' (making it executable from Proper-ties, if necessary).

Command line: Change directory 'cd' to the download directory. Use the command 'tar -zxvf arduino-1.5.3-linux32.tar.gz' to extract the directory. Use 'cd' to open the extracted folder and './arduino' to open the required file.

DRIVER INSTALLATION
Windows:
1. Connect the board to the computer.
2. Open Device Manager (Open 'Control Panel' > Select 'System' > Click 'Device Manager'.)
3. Right-click 'Gadget Serial v2.4' device under the 'Other devices' tree > Select 'Update Driver Software'
4. On the window that pops up, click 'Browse my computer for driver software' > Select 'Browse...' > Navigate to 'hardware\arduino\x86\tools' folder within your Arduino Galileo software installation > Click 'Next'.
5. Click 'Install' on the next Windows Security window that pops up.
6. The Device Manager will get updated. Look under the 'Ports' tree now. There should be an entry for 'Galileo (COM #)'
7. Driver installation for Intel Galileo is now complete.
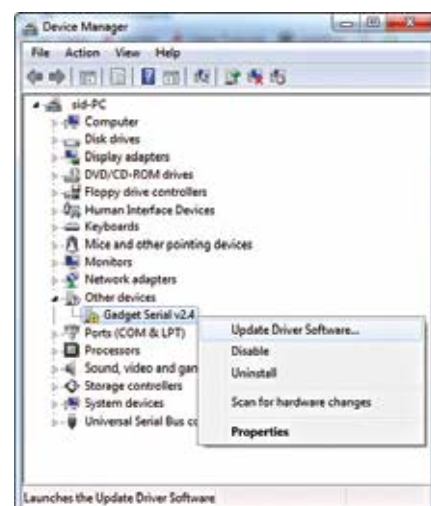
Device Manager before Galileo Driver Installation
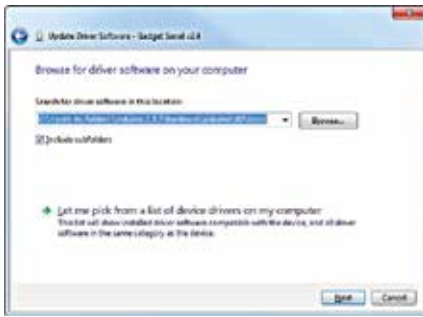
Path for Device Driver Installation

UPDATING FIRMWARE

It's better to update the Galileo board firmware after connecting it to your PC for the first time.

1. Power down the board and remove the SD card (if any). Again power up the board.
2. Open the Arduino IDE for Galileo.
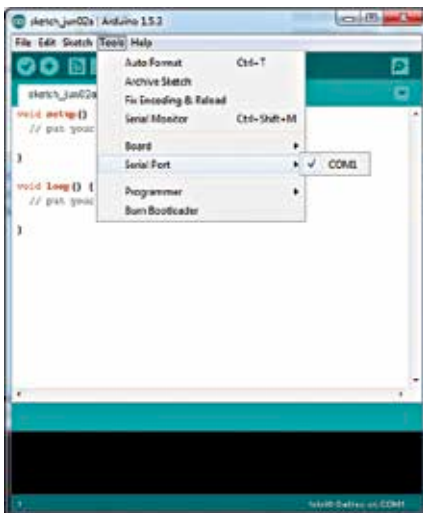
Serial Port Selection in Arduino
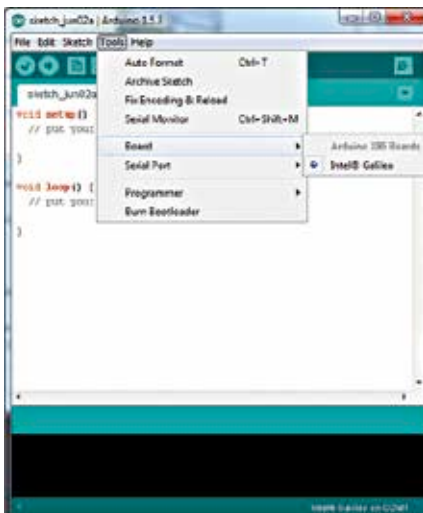
Galileo Board Selection in Arduino

Galileo Firmware Upgrade (Serial Port Selection)

   a. Select the correct serial port (COM port) for your Galileo board under 'Tools' > 'Serial Port'. (COM1, in our case)

   b. Select 'Galileo' board under 'Tools' > 'Board'

3. Check for confirmation at bottom-right corner.
4. Navigate to 'Help' > 'Firmware Update'. Click 'Yes' to complete the updation process.
5. Do not unplug the board or Disconnect the USB until the updating procedure is complete and a window saying 'Target Firmware Upgraded Successfully' pops up.

HARDWARE PROGRAMMING: THE SMALL DIFFERENCE

For this part, we assume you have slight knowledge of C/C++. E.g. Knowledge about functions.

PROCEDURE FOR WRITING CODE FOR HARDWARE DEVICE

Writing code for hardware devices is slightly different from writing software. It is similar to writing a driver for your hardware, where pin numbers need to be considered.

The biggest bug can show up due to a mistake when writing code for hardware devices, i.e. forgetting to run the code in a loop.

Arduino code consists of two parts (functions):
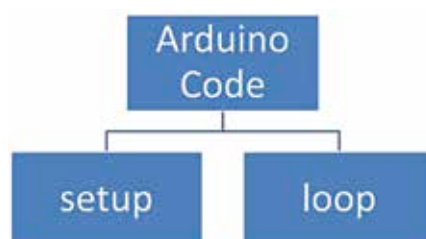
Division of Arduino code

PROGRAMMING THE GALILEO BOARD
ARDUINO CODE

As in C/C++ anything between '/*   */' and after '//' is a comment.

Just as the entry point for a C program is the main() function, the entry point for Arduino code is the setup() function. Preprocessor directives can be used in Arduino code too.

Open the Arduino IDE for your platform and write the following program into the IDE.
Blink (Hello World!)

The program will blink an LED and is the electronics version of the 'Hello World!' program.

All Arduino compatible boards have an LED connected to their 13th pin that is used for preliminary testing purposes.

The code can be found under 'File' > 'Examples' > '01.Basics' > 'Blink'

Given below is the flowchart of the code:

DECIPHERING THE CODE
ARDUINO + LINUX CODE

This example uses Linux system calls to create a Python script, which writes number 0-9 to a file called 'log.txt', one number per second. It then executes the Python script in the background, and reads the contents of the log file in the sketch while the Python script is updating it.

Linux commands can be used in Arduino using the system() function.

To run the 'ls' command that lists the files in directory, the Arduino code can be written as system('ls').

Given below is the flowchart of the code that combines Linux Shell Programming:

DECIPHERING THE ARDUINO + LINUX CODE

More example codes and a Getting Started guide for Galileo board can be obtained at http://dgit.in/inteldoc22192.

LINUX ON GALILEO

The Galileo board has the advantage of being able to run Linux environment on board along with in the Arduino code, combining the best of both world.

The flash memory on board the Galileo is barely enough to store its Linux-based Yocto OS. The default Linux image has a few extra features added to it. The Linux OS can be loaded to a SD card, and Galileo can be set to boot from the Linux image. Using the Linux image, the following features become available:

- **Wi-Fi drivers:** The Galileo supports Intel Wi-Fi cards via drivers included in the Linux image. There are many mini-PCIe Wi-Fi cards.
- **Python:** There are Python scripts readily available that can check for unread emails or perform many other small tasks easily. Custom Python scripts can also be easily built to enhance functionality and truly make your device, a device connected to the Internet of Things.
- **OpenCV:** OpenCV is an open-source computer vision library. Using a webcam connected to the USB port of the Galileo board a live feed from the camera can be captured to perform tasks such as object detection or recognition.
- **SSH:** Secure Shell (SSH) is a command line tool/protocol to securely access a remote computer. This can enable applications that, say, remote control a Galileo that is monitoring a home or allow plain communication with the Galileo board without the serial communication port.
- **Node.js:** Node.js is a library dedicated to building server-side applications in Javascript. Node.js is meant to run on HTTP server and its applications are event driven. Most suited for web projects.
- **ALSA:** Advanced Linux Sound Architecture (ALSA) enables the Galileo board to play sound.
- **V4L2:** Video4Linux2 is a video recording and playing Linux utility.

INSTALLING LINUX

To use Linux on the Galileo board, you will need at least a 1GB SD card. The image file (LINUX IMAGE for SD for Intel Galileo) can be downloaded from http://dgit.in/intelcommunitiesdoc22226. Windows users can use 7-Zip to extract the downloaded file, while Mac users can use The Unarchiver for extraction.

1. Extract the contents of the .7z file to the SD card (without putting it in a folder).
2. Turn off the Galileo board
3. Plug in the SD card
4. Switch on the Galileo board

The first boot takes some time to set up SSH keys.

THE GALILEO COMMUNITY

Intel will be donating 50,000 Arduino-compatible development boards featuring Intel architecture to 1,000 universities around the world. Since the Intel Galileo University Donation
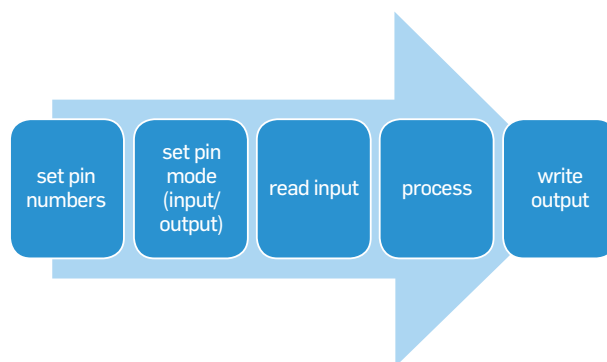
Code flow for hardware programming

```
/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.

  This example code is in the public domain.
*/

int led = 13;

void setup() {
  pinMode(led, OUTPUT);
}

void loop() {
  digitalWrite(led, HIGH);   // turn on the LED
  delay(1000);               // wait for a second
  digitalWrite(led, LOW);    // turn off the LED
  delay(1000);               // wait for a second
}
```

Arduino code for Blinking of LED at Pin 13

```
char output[3];

void setup() {

  Serial.begin(115200);

  system("echo '#!/usr/bin/python' > myScript.py");
  system("echo 'import time' >> myScript.py");
  system("echo 'for i in range(10):' >> myScript.py");
  system("echo '    with open(\"log.txt\", \"w\") as fh:' >>
myScript.py");
  system("echo '        fh.write(\"{0}\".format(i))' >> myScript.
py");
  system("echo '    time.sleep(1)' >> myScript.py");
  system("chmod a+x myScript.py");
  system("./myScript.py &");
}

void loop() {

  FILE *fp;
  fp = fopen("log.txt", "r");
  fgets(output, 2, fp);
  fclose(fp);
  Serial.println(output);
  delay(1000);

}
```

Arduino code for executing Linux code on Galileo board

Flowchart for Blinking of LED at Pin 13

Program began accepting requests in November 2013, individuals have submitted over 1,800 entries from 700 universities worldwide. Intel is also looking forward to integrate the use of boards into the curriculum of schools with some already integrating them in their 2014 syllabus. This will help the maker community in universities to develop creative projects as well as help in validation of experimental results. Among the projects noted by Intel are:

- Creating software for hardware like Google Glass and smart watches
- Monitoring health of elderly
- Brain imaging
- Stratospherical balloon project
- Lunabotics mining
- Computer vision
- Virtual reality

The most common reason for requesting Intel Galileo boards is for a variety of embedded computing applications – whether as an aide in teaching introductory Embedded Computing or Microcontroller Systems courses, or as a project platform for senior level classes. Robotics, sensor networks and controlled experiments were among the most popular proposed embedded areas. More projects can be found at http://dgit.in/inteldemoprojects.

To enable greater collaboration among individuals and groups, Intel has a forum at http://dgit.in/IntelCommunityMakers where people can interact, find solutions to problems and come up with creative ideas. Intel imagines a world where the 'digital integrates with the physical' through wearable technology.

GALILEO FOR UNIVERSITIES

To increase innovation across the entire computing spectrum, Intel will be providing 50,000 Intel® Architecture (IA) Arduino boards featuring the new Intel® Quark technology to many universities. The Intel-based microcontroller boards, in the Arduino form factor that have been the de facto standard for the maker community, will enable university students to innovate creations that will be compatible with other Intel Architecture devices in the Internet of Things ecosystem.

The program includes the following available to the university at no cost:

- Intel® Galileo boards – the first IA-based Arduino boards
- An Integrated Development Environment (IDE) for Arduino on IA
- Getting Started with Intel Galileo programming guide (Participating universities receive one free download for every five Galileo boards; additional copies may be ordered from Amazon at http://dgit.in/IntelGalileoMatt)
- Access to the Arduino on IA support community. Additional technical support, if needed, will be

```
int led = 13;
```
- set pin number where LED is connected using the label 'led'

```
pinMode(led, OUTPUT);
```
- set the pin 13 where LED is connected as output pin

```
digitalWrite(led, HIGH);
```
- turn ON the LED by writing logic 'HIGH' to led pin

```
delay(1000);
```
- wait for 1000 millisecond (i.e 1 second)

```
digitalWrite(led, LOW);
```
- turn OFF the LED by writing logic 'HIGH' to led pin

```
delay(1000);
```
- wait for 1000 millisecond (i.e 1 second)
- proceed to first statement of loop function i.e digitalWrite(led, HIGH);

Code explaination for Blinking of LED at Pin 13

```
char output[3];
```
- declare variable with label 'output' that can hold three alphabets

```
Serial.begin(115200);
```
- initialize serial communication at 115200 bits per second

```
system("echo '#!/usr/bin/python' > myScript.py");
```
```
system("echo 'import time' >> myScript.py");
```
```
system("echo 'for i in range(10):' >> myScript.py");
```
```
system("echo '    with open(\"log.txt\", \"w\") as fh:' >> myScript.py");
```
```
system("echo '        fh.write(\"{0}\".format(i))' >> myScript.py");
```
```
system("echo '    time.sleep(1)' >> myScript.py");
```
- write python script myScript.py to write number 0-9 to file log.txt

```
system("chmod a+x myScript.py");
```
- make the script myScript.py executable

```
system("./myScript.py &");
```
- Execute the python script myScript.py

```
FILE *fp;
```
```
fp = fopen("log.txt", "r");
```
```
fgets(output, 2, fp);
```
```
fclose(fp);
```
- open file log.txt read the number count, write to variable output and close file

```
Serial.println(output);
```
- send the number via serial port

```
delay(1000);
```
- wait for 1 second and proceed to file opening again

Code explaination for executing Linux code on Galileo board

provided for the software environment by Arduino and for the hardware environment by Intel at http://www.intel.com/support/go/galileo

Schools are using the boards to introduce students to embedded systems. Many students are fascinated at the prospect of using increased computing power to extend capabilities of existing projects. See a summary of the breadth of proposed applications at http://dgit.in/UniversitiesGalileo or check out the university maker community at http://dgit.in/makerscommunity where universities will be posting their projects.

INTERNET OF THINGS EXPLORE CHALLENGE

Taking a lead in the Internet of Things (IoT) revolution, Intel has initiated the Intel® IoT Explorer Challenge, an IoT hackathon where selected participants will receive Intel® Galileo Development Kits to implement their ideas in the following categories: Home, Work, Play and Code for Good. Hobbyists, Students & Entrepreneurial Developers 21 years of age and older can check further details at http://dgit.in/intelinternetofthings

Intel India also hosts the Intel India Embedded Challenge, where selected finalists get kits based on Intel® architecture such as Intel® Atom™ or/and Intel® Galileo and mentoring support (in case of students) for prototyping their project. The 2014 Embedded Challenge can be checked at http://dgit.in/IntelEmbeddedChallenge

BEYOND GALILEO

The Intel® Edison development platform is the first in a series of low-cost, general purpose compute platforms meant to cater to a wide variety of categories – from consumer electronics to industrial companies working on the Internet of Things (IoT).

Intel® Edison combines multiple features into its small size, delivering great performance, durability and a broad spectrum of I/O and software to help meet the needs of a wide range of customers.

Those interested in the Galileo board can check the Intel site at **http://dgit.in/intelwheretobuy.** It has a vendor Mouser that sells the Galileo board in India.

You can get inspiration for Galileo-based projects at its community for demo projects at **http://dgit.in/inteldemoprojects**

Intel support team for Galileo boards can be accessed at **http://www.intel.com/support/galileo/emailsupport.htm**

Some of the great features of the Edison board are:
- Intel® Atom™ system-on-a-chip (SoC) based on 22nm fabrication Silvermont microarchitecture including a dual-core CPU and single core microcontroller
- Integrated Wi-Fi, Bluetooth LE, memory and storage
- Support for more than 30 industry-standard I/O interfaces via a 70-pin connector
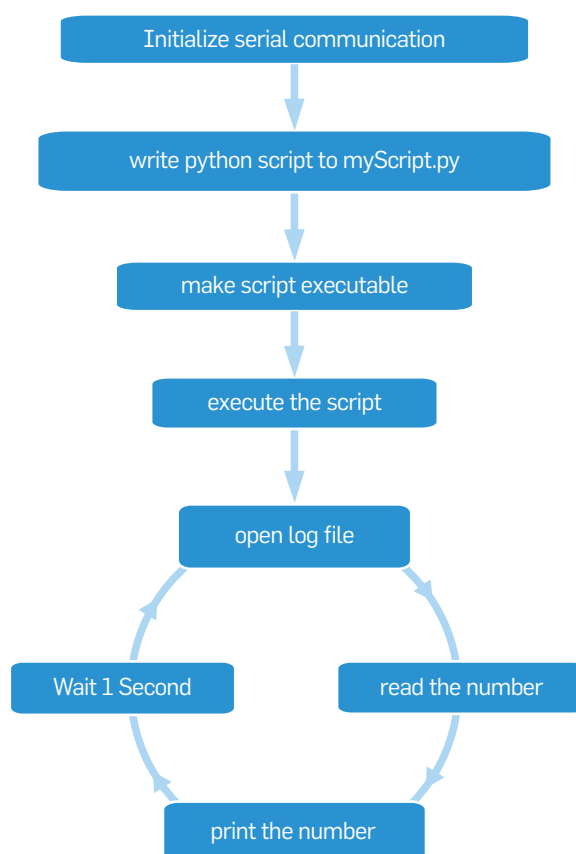
Flowchart for executing Linux code on Galileo board

- Support for Yocto Linux, Arduino, Python, Node.js and Wolfram
- Open Source community software tools to enable easy adoption and help developers.

The unique combination of its small size with the power of the Edison board can empower developers to build the Internet of Things.

More info on the Edison board can be checked at http://dgit.in/EdisonDevtBoard

To sum up, the Galileo board has wide applications in many areas, with a large number academic participants interested in the field of robotics and wearable electronics. Combining it with the Edison board can increase it capabilities manifold for seamless integration into myriad applications.

GALILEO HARDWARE SPECIFICATIONS
PROCESSOR
- Instruction Set Architecture (ISA)-compatible 32-bit Intel® Pentium® processor
- 16 Kbytes L1 cache
- 512 Kbytes of on-die embedded SRAM
- Simple to program: single thread, single core and constant speed
- ACPI-compatible CPU sleep states supported
- Integrated real-time clock (RTC) with optional 3V 'coin cell' battery for operation between turn on cycles
- 400 MHz clock speed

STORAGE OPTIONS
- 8 Mbyte Legacy SPI Flash to store firmware (bootloader) and the latest sketch
- Between 256 Kbytes and 512 Kbytes dedicated for sketch storage
- 512 Kbytes embedded SRAM
- 256 Mbytes DRAM
- Optional micro SD card offers up to 32 Gbytes of storage
- USB storage works with any USB 2.0 compatible drive
- 11 Kbytes EEPROM programmed via the EEPROM library

WI-FI SUPPORT
Integrated Wi-Fi functionality (not Wi-Fi Shield) is supported in this release.

The Intel® Centrino ® Wireless-N 135 adapter that can be plugged into the mini PCIe can be used to add Wi-Fi support. To use the Intel® Centrino® Wireless-N 135 adapter, run the Linux OS from microSD. ∎

THE BIG BYTE THEORY

WHETHER YOU CONSUME IT OR CREATE IT, DATA RULES THE FUTURE OF TECH. HERE'S WHY IT SHOULD MATTER TO YOU...

WHO CONTROLS ALL THIS BIG DATA?
WHAT ARE THEY DOING WITH IT?
HOW DOES IT AFFECT YOU, AND CAN YOU USE IT TO GET RICH?

YOU ARE BEING SOLD

How big data analytics, social media engines and everything you love about the Internet is used to track your every move, repackage you as eyeballs and sell you to the highest bidder

Jayesh Shinde

In the late '80s and early '90s as most of us were introduced to the digital era and grew up using a computer, our understanding of data was largely mathematical in nature. An arbitrary construct of 1s and 0s, data was an innocent consequence of our indulgence with the PC in its early days. It was something you marvelled at and were fascinated with.

Back then data was impersonal, immaterial, frivolous, something we never thought of twice. It was either a result of a calculation or that which was produced at work or generated in a closed, controlled lab experiment. It was fun, dealing with this data, and we started generating more of it as the digital world started expanding and making in-roads into all forms of our life. As computers swept through industries, ringing in wave after wave of digitisation from one industry to another, data generation reached new heights. And once the Internet Age took off, there was no looking back. From downloading software to music and movies and a variety of digital thingamajigs, our appetite for data knew no bounds. And as the data pipes

that connected us to the rest of the world got fatter and better adept at handling greater chunks of data traffic, it flamed the inferno of data we dealt with on a daily basis. Before we could pause to get a sense of the road we were embarking upon, without realising it, data started to make greater in-roads into our lives. It started to dominate our existence.

Welcome to Big (bad?) Data: It's here to stay

Circa 2014, data in the digital age is almost synonymous with who and what we are. It defines and characterises us, and is grand

in scale and volume. It's like an overwhelming and out-of-control tsunami. The narrative around data has evolved from consumption to self-production. Equipped with camera phones and tablets that feature Internet connectivity, built-in GPS and other gizmo wizardry, we can easily generate more content than we've ever been able to in our history as a species. In fact, all the data generated and stored by mankind till 2003 went on to be doubled by 2010.

The Internet and World Wide Web has made publishing, posting, saving and retrieving data easier than a wink. Sharing

REALLY BIG DATA FACTS

- IDC estimates that by 2020, business transactions – including B2B and B2C – on the internet will reach 450 billion per day.
- Walmart handles more than 1 million customer transactions every hour. This is imported into several databases, estimated to contain more than 2.5 petabytes of data.
- In 2008, Google was processing 20 petabytes (20,000TB) of data per day.
- AT&T has a database that's 312 TB in size and includes 1.9 trillion phone call records.
- 30 billion pieces of content are shared on Facebook every month.
- Over 100 hours of video content is uploaded to YouTube every minute.

data about yourself is the norm, as privacy is all but a dead concept. When you can't meet friends or family regularly, how do you stay in touch and share your life moments with them if not through popular social networks such as Facebook, Twitter and Google+? We started becoming less careful about what we posted about ourselves online out of a shared convenience experienced by all of us and a misplaced sense of trust with big corporations, who were ultimately controlling and saving all the data we were creating and sharing on their online properties.

This trend birthed the concept of Big Data. IBM likes to define it the following way: "Every day, we create 2.5 quintillion bytes of data – so much that 90 per cent of the data in the world today has been created in the last two years alone. This data comes from everywhere: sensors used to gather climate information, posts to social media sites, digital pictures and videos, purchase transaction records and cell phone GPS signals to name a few. All of this data is essentially Big Data."

As you can imagine, there's plenty of focus on business initiatives and technology practices in companies of all shapes and sizes on Big Data. Simply because of the missing insights it holds and the treasure-trove of information it can provide to add to a company's competitive edge in an increasingly global marketplace. According to a study conducted by Tata Consultancy Services Ltd, two inescapable trends in Big Data provide guidelines for the overall types of data that companies should be looking to gather.

The first trend is internal digital data. This type of data collected from sensors and other remote devices attached to products – a GE aircraft engine or a Xerox copier, for example – enables companies to track their products long after they've been delivered to customers. This provides a major opportunity for companies that can collect unstructured sensor and other data from their products.

Take the classic case of the aviation industry, for instance. An estimated $284 billion is wasted annually in Aviation by inefficient fuel management, unscheduled aircraft maintenance, flight delays and other issues. Imagine how a company like GE (whose engines are bolted onto 53 per cent of the world's wide-bodied planes)

HOW SOCIAL MEDIA SITES USE DATA

Sites

facebook. Linked in foursquare Instagram Yammer
flickr (twitter) g+ Path Pinterest StumbleUpon

Functions

Sharing   Communication   Searching

User Data

Age   Education   Likes
App Use   Gender   Location
Career   History   Pages
Check-ins   Interests,   Profession
Cookies   Keywords   Search Terms

Processed Info

Tailor Experience
Find trends, react to users, see what users like/don't like

Spread Information
Breaking news, alerts, warnings, predicting trends

Advertising
Targeted ads, Ad campaigns, Sponsored stories, Adwords, keyword ads, target demographic, deals, sponsored search

Analytics
Targeted status updates, campaigns, targeted ads members, traffic, find trends

that can help customers cut their fuel and maintenance costs will no doubt boost market share and increase revenue.

The second trend is data that exists outside the information systems of a company. It's in the hands of customers, third-party data providers, suppliers, social media sites and other sources. To get a holistic picture about their customers, companies must collect this external data. Imagine a chain retailer that can obtain real-time data on customers who are on the move (on their smartphones), within five miles of its stores (the telcos have this data) and about to make a major purchase (such as replacing a refrigerator – the records of

which are owned by the manufacturer). The buyers' decisions are most influenced by reviews in Consumer Reports (which are, of course, found in Consumer Reports' online archives). For that chain retailer to get the customer to visit its store that's nearest to that customer and make a $2,000 purchase, it needs to tap external data held by the telco, the appliance maker, and Consumer Reports – and in minutes or perhaps even seconds before that customer moves to another store. The internal data available with the retailer isn't nearly enough to influence the consumer's purchasing decision.

Many great insights to be derived from Big Data are likely to come from

such sources as digitised video and audio, sensor data, email, documents and the unformed text that fills Facebook, Twitter and other social media websites. People don't usually mind companies collecting internal data, if it means that the companies will return the favour in terms of better quality of service or even price cuts. It's the collection of unstructured external data that's starting to tick people off, because it rouses in them a sense of betrayal of trust against the websites and services that are expected to handle their personal data and hold it sacrosanct. Ah, time for the naivety of Internet users to end.

You're the product being sold

If you're not paying for it or getting something for free, then you're the product. This is an old business mantra, and most people already know this. The basis of the business model is you availing of a product or service for free in return for having your personal data be mined and shared with all kinds of companies that can use this data for their benefit. Usually, this data is used to sell advertising space or intelligence to improve advertising efficiency. In the age of Big Data, this old business adage is under increased focus.

According to a Business Insider report, "the average global Internet user spends two and a half hours daily on social media, and their activity reveals a great deal about what makes them tick." Having woken up to the fact that social networks constitute a huge amount of consumer Big Data, now social networks are making sig-

nificant investments in putting this data to work – largely for themselves and to some extent also for their users. If social networks like Facebook, Google+ and others successfully connect the dots between their users' relationships, interests and spending habits, they stand to gain a lot as they'll be able to provide their users with personalised content, and in turn advertisers will be able to hyper-target users.

Here are some more insights into the unique data each social network is collecting about their users, according to the Business Insider report examining the kind of information popular social net-

IF YOU'RE NOT PAYING FOR IT OR GETTING SOMETHING FOR FREE, THEN YOU'RE THE PRODUCT.

works collect and how that data fits into their product strategy:

- Facebook collects 63 different pieces of data for its API – more than any other social network. The mind boggling scale of information shared on Facebook and consumed by its users is so immense that Facebook can provide a window into what people care about with surprising accuracy. Facebook's "like" button is pressed 2.7 billion times every day across the

web. All that is information Facebook is collecting about you and millions of others to decipher your tastes and even accurately predict them.

- Google+ helps the search engine giant contextualise its trove of search data, offering hints and clues as to why people search for certain kinds of information. This helps in generating patterns about user behaviour with greater accuracy. The relationship goes in the other direction too – the number of "+1s" and other Google+ data are now a top factor in determining how a web page ranks in Google's search results.

- Twenty-two per cent of LinkedIn users have between 500-999 first-degree connections on the social network, and 19 per cent have between 301-499. Just the way people endorse and recommend each other on LinkedIn is creating a new way of understanding recruitment and retention patterns on the popular professional social network.

- At its peak on August 3, 2013, Twitter was processing 143,199 tweets per second globally. These tweets provide a crucial real-time window into the news and information that people care about the most. Fifty-two per cent of Twitter users in the U.S. consume news on the site (more than the per cent who do so on Facebook), according to Pew Research data.

- Hundreds of thousands, if not millions, of product images are pinned to personal pages (called "pinboards") on Pinterest every day. They represent a unique window into millions of shoppers' aspirations. More than 17 per cent of all pinboards are categorised under "Home," while roughly 12 per cent fall under "Style/Fashion." What's more, 80 per cent of pins on Pinterest are repins, so images of products have a long shelf life, long after the initial pin has been posted. Imagine what advertisers would be willing to pay anyone who puts them in touch with potential customers with such high aspirational value for all sorts of commodities and products? Does this mean that data gathering is wrong? Of course not. And it's practically impossible for websites to not gather any data about you while you're on the web.

THE BIG OPPORTUNITY

IBM inarguably provides the most simple definition of Big Data by explaining the way it spans three main dimensions: Volume, Velocity and Variety.

Volume: Enterprises are awash with ever-growing amounts of data of all types, easily amassing terabytes – even petabytes – of information. Volume refers to the ability of turning 12 terabytes of tweets created each day into improved product sentiment analysis and converting 350 billion annual meter readings to better predict power consumption.

Velocity: Sometimes even 2 minutes is too late. For time-sensitive processes such as catching fraud, Big Data must be used as it streams into your enterprise in order to maximise its value. With it, you can scrutinise 5 million trade events created each day to identify potential fraud and analyse 500 million daily call detail records in real-time to predict customer churn faster.

Variety: Big data is any type of data – structured and unstructured data such as text, sensor data, audio, video, click streams, log files and more. New insights are found when analysing these data types together. With it, companies can monitor 100's of live video feeds from surveillance cameras to target points of interest and exploit the 80% data growth in images, video and documents to improve customer satisfaction.

Practically every website gathers data in some form, for analytics, for business or to help improve its end-user experience. Without you knowing it, there's already a significant amount of data out there for interested parties to use, and the process of analysing all this data and following up on its results is still very much being figured out.

Being tracked and targeted, for better or worse

If you've ever tried searching for a product on Flipkart, Myntra, Amazon or any other e-commerce site, then you must've definitely seen that product or item follow you around on a few more websites long after you've exited that e-commerce site. Search for a pair of shoes on Myntra.com and see an ad for that exact shoe follow you around through Google's ad banners, Facebook and some other websites. Post a Facebook update on your new phone purchase and watch how you mysteriously begin to see ads for phone cases and accessories follow you across the interweb.

Social networks are the primary source of this personalised metadata. Browser cookies are the most basic form of such information gathering, however search queries, third-party plug-ins, device-tracking technology (cellular and GPS), and ad networks also study and monitor your browsing pattern to learn more about you.

Just think about it for a second. When you install an app on your smartphone, the amount of access it requires. Or when you create a new social media account, observe the amount of information it asks for, that an unsuspecting individual would be willing to provide. Status updates, images, videos, links, interactions, messages...browse your history just to see how many topics and subjects you've spoken about or commented on during your time online.

This is the exact reason why so many websites offer to connect you to their sites via Facebook or Twitter. Why? Simply because allowing this gives them access to a treasure trove of data that's otherwise inaccessible had you signed up with them exclusively by entering just a measly user name and email address – since all your personal data is heavily invested into social networks like Facebook and Twitter. This works for both, the external
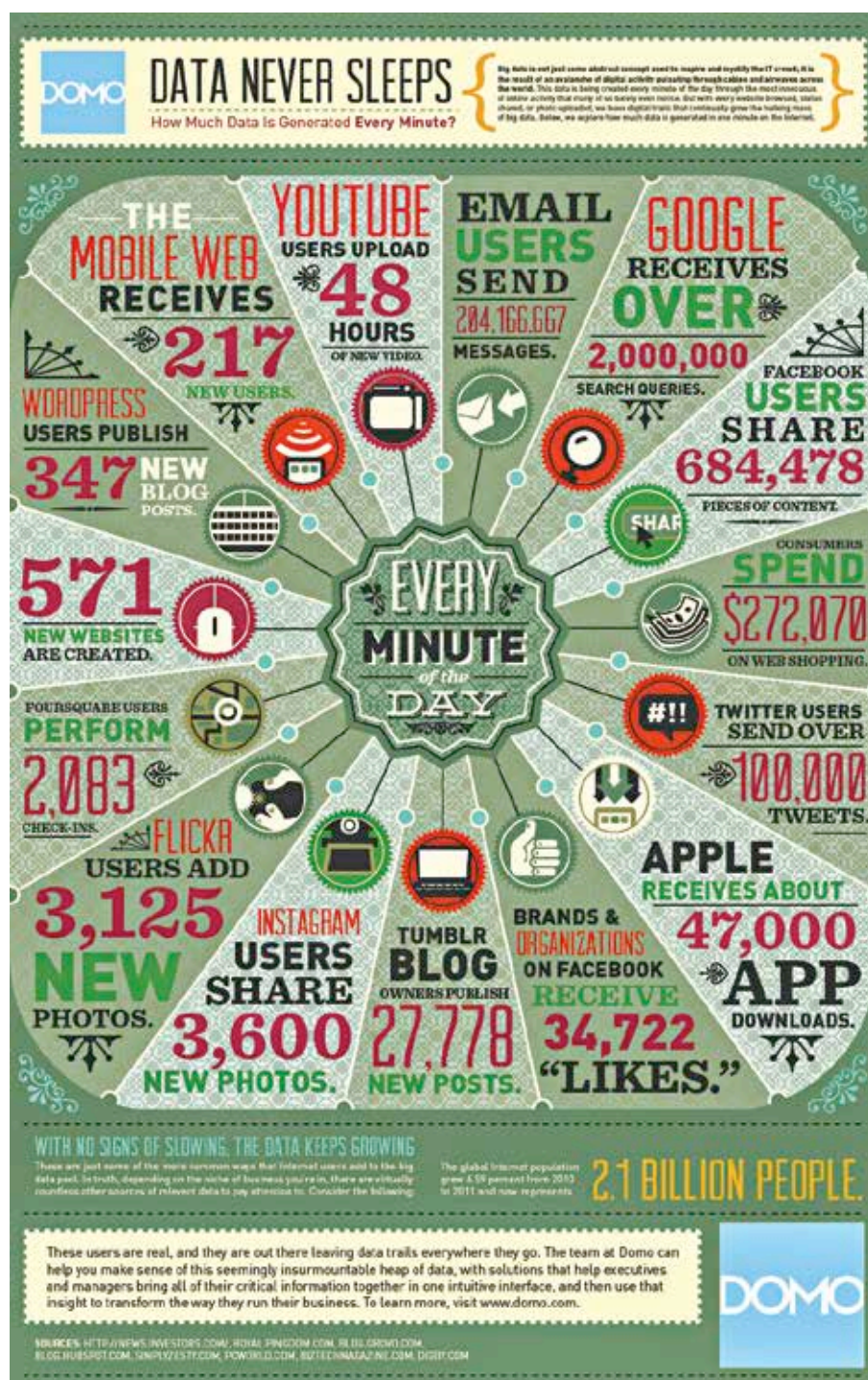
Marvel at the facts presented in the above infographic

website and the social network since the former gets data about its visitors that it otherwise would've missed out on and the latter can acquire more information about your interests, where you're coming from, etc. Both sides profit from this partnership, and therefore you'll find the web littered with these social share buttons and plug-ins.

As for what sort of data is gathered by websites when you're online through a browser window or an app, here's just the tip of the iceberg: your browsing data takes into account your browser type, time, date, IP address (to know where in the world you are), email address, phone numbers, device information, your location, operating system and other profile information (age, sex, marital status, annual income, etc).

Social networks argue the point that such data is collected to better serve the

users of their service. "If we know what they want and what they like, we can better fit into their online lives," they say. However, curiously enough, this data is also sold to advertisers who need targeted advertising. This information is also forwarded to marketers who can either choose to chase you now or later in the future. Does this that mean social networks look at you as nothing but eyeballs to sell ads to? If Facebook is valued at $18 billion and has just over 1 billion monthly active users, does that mean every Facebook user is worth $18 as far as the social network is concerned? The answer to that is not so simple.

Advertising is a big part of the online economy. Without it, websites like Google, Facebook, Twitter and LinkedIn would shut down because they all use metadata of their users for the purposes of targeted advertising, and for the most part users have gotten used to this fact by now. Some other websites and online services like Pandora – an online radio service provider – in addition to selling info for targeted advertising also sends it to marketers. Ad campaigns in Gmail and sponsored stories on Facebook and Twitter feeds are all based on the preferences social networks have determined their users have based on their likes, dislikes and activity history.

To data or not to data, that is the question

When Amazon or Flipkart tracks your browsing history within their websites, we know it's doing so to give you great recommendations and alert you to deals that might interest you. It's a win-win for both, the common netizen and big online

"IF WE KNOW WHAT THEY WANT AND WHAT THEY LIKE, WE CAN BETTER FIT INTO THEIR LIVES" – ECHOES EACH SOCIAL NETWORK WHO WANTS CUSTOMISATION

corporation. That's because users feel empowered and in control of their data being used for them and not necessarily against them.

However, the feeling is far from mutual when you're left to navigate the murky, muddled waters of social media, whether

"I spend most of my time assuming the world is not ready for the technology revolution that will be happening to them soon."

–ERIC SCHMIDT
Executive Chairman, Google

it's through a browser window or via installed phone/tablet apps.

One of the major problems facing the Big Data mining industry is very simple to understand and comprehend. Just like huge swathes of Americans headed west once gold was discovered in California, and there was little or no semblance of law among early settlers, similarly, in the rush to mine more data of users (of which there's an unlimited supply) a number of apps are being pulled up for taking user data without the necessary permissions.

Take the example of Path, an app that got rave reviews and became very popular throughout 2012-13 before the

party ended abruptly, as it was found to be downloading iPhone users' phone numbers without their explicit permission. Following this, upon reviewing several other apps of leading online services, a number of apps including Twitter were found to be doing the same.

Rude shocks surrounding the (mis)use of Big Data abound on the interweb. Take the case of the retailer, Target Corp.'s analytics program which revealed a teenaged girl's impending pregnancy to her family, much to their distress and without the girl's consent. Similarly, an online travel agency called Orbitz was found guilty of up-charging Apple users after Big Data insights revealed that Apple customers were generally willing to pay more for travel. All such incidents heighten the tension around the positive use of Big Data analytics, giving users a glimpse into just how horribly wrong things could go if their metadata wasn't handled with care or was being used against them (despite assurances to the contrary).

There are other reasons for this growing atmosphere of mistrust. Users who are on social networks have little or no clue as to how they're being tracked and the magnitude of their tracking data. Also, since the entire concept of Big Data mining for business intelligence is so young and carefree, another major problem plaguing the system is a sense of wild wild west attitude: there's no industry self-regulation of analytics and social tracking on the interweb, nor (as far as we know) does the advertising industry's self-regulation allow you to opt out of social tracking – you can't just see a tracking-based ad and click a "do not track me in future" button on the ad, because there's none right now.

Last December, while talking about Big Data, Google's executive chairman, Eric Schmidt said, "The real issue is user-generated content," noting that pictures, instant messages, and tweets all add to this. But, he cautioned that major companies shouldn't do all sorts of things with user generated data, just because they can. While technology is neutral, Schmidt doesn't believe people are ready for what's coming. "I spend most of my time assuming the world is not ready for the technology revolution that will be happening to them soon," Schmidt said, according to a TechCrunch report. And for the most part, Schmidt's cautionary note is true.

If our handling of Big Data's past and present has been a complicated cesspool, its future surely promises to be an even more daunting task for us to deal with

– if the current style of exploitative data analysis is to pervade.

According to a Gartner report, the volume of data generated by digital devices is expected to go through the stratosphere. Within the next five years, the Internet of Things devices will fly off the shelves and into our network terminals, with an estimated 30+ billion devices reported to be connected to the internet by 2020. This means that an average family will have 10 internet-connected devices in their home, if not more. The vegetable tray in your refrigerator may well be able to alert you when it's running low on fresh supplies and (who knows?) may even be able to automatically place an order for more in an online grocery store. This is no science fiction, it's fact-based reality expected to be true within just a few years.

Google's recent $3.2 billion purchase of Nest, a maker of internet-connected thermostats and smoke detectors, is now starting to make a lot of sense, isn't it? Nest firmly believes in a "conscious home," and Google clearly can't wait to cash in on the profits it surely foresees in the offing and it will be trying hard to capture this market before anyone else. If your home is "conscious" and knows about you – not just you, but everyone else in there and sundry – just imagine what Google could

do with that data. And with all these possibilities, if user data isn't handled carefully and privacy is violated or infringed upon (as Google recently did through a series of Google+ gaffes), just imagine the backlash of users against an overarching system where rules are so dimly defined.

SOMETHING NEEDS TO GIVE TO RESTORE CONTROL AND TRUST. THEREFORE, GOVERNMENTS ARE NOW WORKING TO FORCE A CONVERSATION BETWEEN BUSINESSES AND THE PUBLIC, FROM A LEGAL POINT OF VIEW.

It's frightening to think that any unsuspecting object could one day possess the potential to spy on its owners and other people and tailor their experience of the internet, and maybe life at large through a bid for their eyeballs between cash-filled advertisers and marketers.

By all indications, the age of infancy as far as Big Data analytics and its applications are concerned is well and truly over, as consumers take notice and start worrying about the rapid increase in the collection and use of their per-

sonal information, and the potential for its abuse. Pew Research Center recently found that 50 per cent of Americans are concerned about their information on the Internet – up from 33 per cent in 2009. In addition, Pew's survey also reveals that a whopping 86 per cent have made efforts toward hiding their online identity and not be tracked by entities without their explicit permission.

Ultimately, there's no running away from the fact that Big Data is here to stay and it's a necessary evil of our times. There's no running away from it, unless a return to Stone Age as an option is something that interests you. Undoubtedly, though, the positive use of big data in impacting social, cultural and political change in our lives outweigh its demerits by a long shot. And people are excited about this.

However, privacy issues related to big data analytics and the collection of consumer information have been hot topics in political circles of late. Covert NSA programs profiling and cataloguing civilian data, and governments around the world spying on their people have added to the atmosphere of mistrust that abounds in this sphere currently. However, something needs to give, and therefore governments are now working to force a conversation between businesses and the public, at least from a legal standpoint. If nothing else, at least it would be a start, as more work will follow, no doubt.

Until then, you, me, all of us who log in online – right from the instant we plug in our computers to a network terminal or connect to a Wi-Fi or cellular data signal on a smartphone or tablet – have to wake up to the reality that all of us are being tracked. We're all commodities and currencies to be traded on the internet, to run the web. Unless a better system arises, we're stuck with this, unfortunately. **d**

The future of data exposure and Internet is personalised experiences, all thanks to the advent of Big Data analytics that is increasingly dictating what you see on the Web

BIG DATA, SMALL BYTES

Localisation and its importance

Big Data is an almost never-ending stream that can neither be stemmed nor contained. How do you make sense of it and how can you use it to your advantage? Let's find out.

Anirudh Regidi

All forms of energy in the known universe have a tendency to seek a low energy state. If anything, it won't be too much of a stretch to say that all of physics is the study of energy conservation. Every particle or wave or atom or electron, everything seeks to reduce its energy state in some way or the other. The only reason a hydrogen atom exists is because the components that make up that atom find it more convenient to stick together than to roam free and thus, conserve energy.

You might be wondering why we're talking physics in an article that's almost entirely tied in to us and our data and our privacy, but rest assured, there's a point to be made here. The point we're trying to make (admittedly in a very roundabout fashion) is just this, as with every form of matter, our sole mission in life is to find

ways of expending less energy. The reason plastic spoons are so popular, despite being environmentally destructive, is that it's convenient for us to use them (because we don't need to make that extra effort to wash them and store them). As someone once said, if trees were to double as Wi-Fi antennae, we'd be living in a greener planet and spend more time in parks than at our PCs.

Big Business

The whole purpose of any business is to offer a product or service to the consumer that is a more convenient means of achieving some goal. Amazon a more convenient store, Google a more convenient search engine, Windows a more convenient OS, a non-stick pan a more convenient cooking utensil, Digit a more convenient technology fix; we could go on forever.

This is where Big Data comes in. Earlier, hitting on a revolutionary idea was as much a matter of intuition and luck as it was of research and analysis. That intuition was also a product of Big Data in a way, like Warren Buffett stating, "I look for simple businesses, with consistent performance, and favourable long-term prospects" when talking about his investment in Coke, a decision that any other investor would have balked at making at the time (for various reasons, including the fact that Coca Cola posted a 2% loss that same year). The data was there for everyone to access and it was, in fact, that very data which indicated to other investors that Coke was unworthy of much attention and investment.

As the previous story would have made abundantly clear to you, Big Data is just that, massive chunks of data that's

generated (or can be generated) at a tremendous pace. By itself it will not revolutionize the world and nor is it the answer to world hunger and bring about world peace and all those other ideals that we ascribe to it. Think of it this way, the fact that Wikipedia exists doesn't mean you're a genius, especially if you're spending all your time tweeting selfies and commenting on random posts.

Make Big Data work for you

Does Big Data have the potential for ending world hunger? Of course it does. Will it? Of course not. It'll take someone like you to access that vast data archive, calculate the amount of food produced, the amount of food wasted, the most efficient method of distribution and all that sort of thing. Quite a task.

Essentially, to make Big Data work for you, one must learn to sieve through it and find what one is looking for. You need to ask the right question, or, as Christopher J. Frank (of American Express) puts it, the IWIK (I Wish I Knew) approach. We can explain this better with a simple case study.

Case Study No.1 (Shoes)

Suppose you're a manufacturer of shoes (Nike, BATA, Woodland, take your pick). Randomly creating shoes based on trends that you observe is good enough in itself. You can obviously predict something as obvious as rain shoes for the rainy season, airy sandals for summer and so on, but it's something that anyone with a half a brain can predict. How do you do something more?

I Wish I Knew what my customers do with their shoes: How else will you know what shoes to make? The easiest, but most expensive method would be to contact Google and try to extract Google Now data from them or you can try to build your own app. What app do you build? You build one that offers something to your consumer, not just something that'll serve your needs.

Say you build a fitness app, something that just tracks footsteps. This will give you data on how much time people spend walking, jogging or running. But what if you take that one step further, what if you start tracking locations, figuring out the route that your app user takes? What if you could collate that data

Shoes of all shapes and sizes, can Big Data recommend the perfect one for you?

and figure out popular jogging locations or walking routes?

What if you could offer that data to the user in exchange for a little bit of information, such as the type of shoes they wear and when? Extrapolating further, you could ask a user if they take a dog with them, suggest routes exclusively for dog users. Before long you'll have an entire army of joggers using your app, relying on you for information on where and when to jog and each and every one of them just pouring data into your servers at an alarming rate.

Taking this even further, suppose you start monitoring the age of your user, his health with the heart-rate

monitor on his phone or wrist-strap or whatever. You can alert that person when something is going wrong, or he's not exerting himself enough and should jog faster. You can use this data to create better suited shoes and sell them to that user (knee friendly shoes for elderly grandmas for, example).

What you've achieved with this simple app is a dedicated audience, discovered the habits of your user, the terrain they run on, their average speed, the average distance covered, and so much more. It's even within the realms of possibility to offer customised shoes to every user.

You don't even have to stop at shoes, you can start your own line of accessories, restaurants, offer your data to advertisers, create a dating app that matches users with similar stats; the possibilities are endless and the potential for making money just as endless.

With one question that set everything in motion and assuming that you've implemented everything well and that the idea was accepted and embraced by the population as a whole, you've generated data on all the following:

- The type of people who buy your shoes
- The age group of said people
- The health of such people
- The terrain they run on
- The kind of shoes they wear
- The amount of time and the fashion in which the shoes are used
- The music they listen to while jogging
- The days and times that people jog and more.

You use this data to help you:

- Understand your audience and the market you operate in
- Design shoes to suit your audience (height, weight, age, state of knees, etc.)
- Design soles that suit the terrain your audience is in the habit of traversing (specific to the city they're jogging in for example)
- Generate ad revenue with targeted advertising and suggestions.
- Direct your audience's buying habits and decisions and more.

Your audience gains the following information from the data you collected:

- Suitable walking/jogging locations
- A better social life (hopefully)
- A personalised shoe shopping experience (maybe even personalised shoes)
- Big Data on themselves that they can make use of if they see fit to do so, among other things.

All of this can theoretically be generated by an idea, an app and a willing audience. All you're doing is analysing that data, localising it and helping yourself and your audience at the same time.

Case Study No. 2 (Homes)

We're taking a real world example here, www.housing.com. The idea was simple, in the founder's own words, "We wanted something better. So we built it" (it's not an original quote for sure, but we digress). Starting out as simply a better way to find accommodation, maybe for the founders themselves, the site has moved on, transformed into the
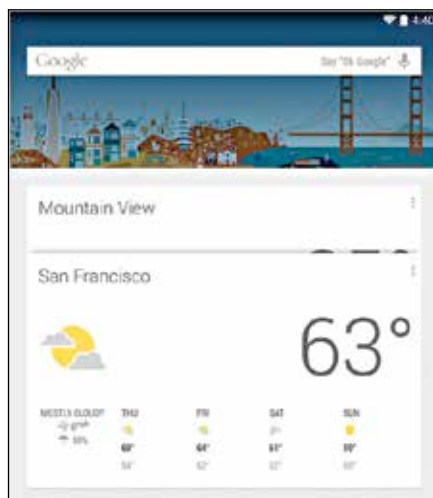
The irrepressible Google Now

most convenient destination for finding a house across select locations in India.

How does it work? You go to the site, pick a location, the radius within which you're willing to stay and voila! You have a page that's filled to the brim with listings that you didn't know existed.

The folks behind Housing.com didn't just stumble across this data somewhere. They knew what they wanted, devised a method of acquiring this data and then sought about acquiring it. They spent months talking to estate agents, going door to door, gathering images of the houses and rooms on offer, devising means of rating locales for child-friendliness and such like. This was hot, sweaty, back-breaking work that was required to lay the ground work for such an endeavour.
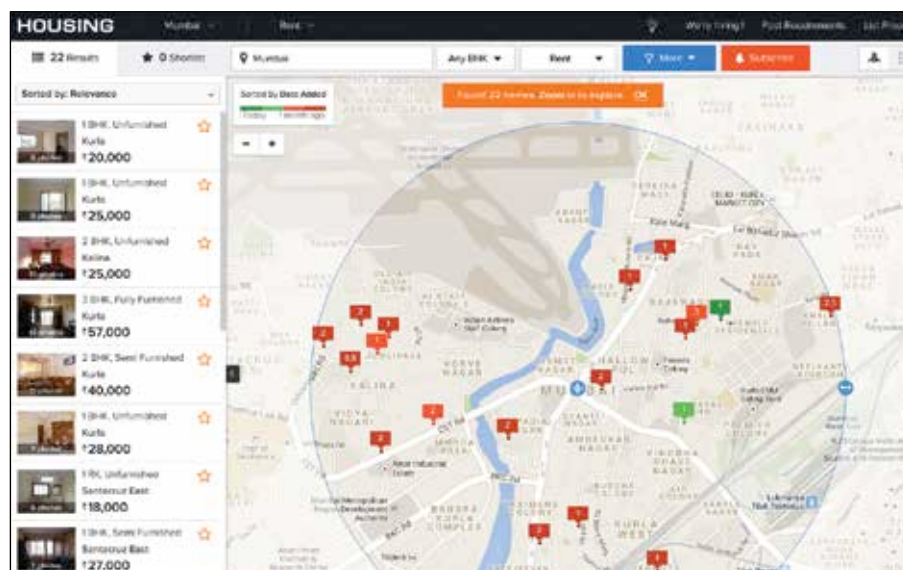
Specify a location and a radius and Housing.com will give you results.

The result however is a site that's grown by leaps and bounds and might end up as the ultimate housing destination. Again, the data was there for anyone to take, the technology available for anyone to implement, but it took someone with vision and drive to spot the opportunity and put in the effort to grab it. Other sites with a similar mind-set include localbanya.com and Squeakee (www.offerson.com).

Case Study No. 3 (Location)

Google's Street View hasn't come to India for various reasons, legal and otherwise, but that didn't stop Wonobo (www.wonobo.com) from going ahead and doing something about it. Already in the business of offering mapping services (mapping data that's at the very least, an even match for Google Maps), Wonobo set out to "use mapping technology to better people's lives".

What Wonobo did is what Street View could only promise. They set about with a plan of mapping our country with their own variant of Street View, but they didn't stop there. They mapped over 50 cities in the country, yes, but in the course of mapping the city, they also pinned every single grocers, restaurant, business, hotel, *chai wala*, and *raddi wala* they could find. Not just that, they gave them a web-page to call their own, added pictures, contact details and have allowed for such things as a full menu, items for sale, etc. Rooms in hotels, dining areas in restaurants, all can be captured in a photo sphere of sorts and showcased for all to see.

The staggering scale of the data that was (is) being generated (and the people being empowered) is only matched by the speed and efficiency with which the entire project was carried out. The resultant site is a surprisingly comprehensive map of a city in what can be considered to be 3D. All you've got to do is fire up the site (it works even on mobile devices) and "walk" the streets, browsing through local offerings and discover hidden areas that you'd normally never venture into.

Magic

All these case studies only serve to highlight the shocking amount of information that can be extracted from those tiny, insignificant bits of data that are gathered about you and your surroundings. The

information by itself is as harmless and useless as a random assortment of ones and zeroes; what matters is how that data is used. What's even more interesting is how accustomed we've grown to the rewards that Big Data offers us, and this despite us raising a hue and cry over the supposed loss in privacy that this data gathering entails.

The NSA gathering data on the world sent everyone into a tizzy, but Google and Facebook gathering data on you is something we didn't even notice (or hoped to ignore) until very recently. The difference between the NSA's and Google's or Facebook's approach is that the NSA has total control over that information, information that can be used to create trouble for you as an individual or even your community at large. The fear is that this information is probably being misused by the (U.S.) government and we're worried that that information could be used to hang a sword over our heads.

Google, Facebook, Zomato and other such companies are gathering such data, but they're also promising you complete privacy, a service that you'll gladly avail and results that you're very happy with. It's a question of respecting privacy and offering a valuable service than of ripping you off.

Would you rather give up the comfort of Google Now's traffic updates if you're a regular driver, Last.fm's music recommendations, Zomato's restaurant recommendations and so much more? You won't, because it's convenient, you don't believe you're divulging too much and you're more than satisfied with the service being provided. Why wouldn't you want Netflix to suggest the perfect movie for a Saturday night?

Government institutions like the NSA are what's giving Big Data its bad name. Both exploit the Big Data they gather to satisfy their personal agendas (we fear). To such companies and institutions you're nothing more than a pot of gold or a psychological profile. You're probably much more valuable than even that to Google or Facebook, but such companies need you to trust them if they're to make money and that trust is earned by treating you with respect and respecting your boundaries. Once any of these companies overstep that line, their entire world will come crumbling all around

Wonobo.com in action. Big Data meets Street View.

them. Unless they generate enough data to attain omniscience of course, which is a different matter entirely.

The tenacious fingers that feed Big Data's insatiable appetite are everywhere, slowly but inexorably dipping into every pie and extracting information. There is no escaping it and it's high time we embraced it and found ways to deal with it rather than fear it. If it gives you any consolation, it's most likely that you've already added a surprising amount of

SURGE PRICING

Uber was recently in the news for its controversial "surge pricing" policy. If you don't know, Uber is a service that offers luxury cab service to anyone who's willing to pay, but at a cost that's determined by demand. A small example of Big Data at work, but on a much smaller scale.

The reason Uber was in the news was because they charged shockingly exorbitant rates to users in New York during a recent snowstorm. While some might call this arm-twisting, Uber simply called it sound decision making. Whether Uber was high-handed or not is for the people to decide, but the fact that the service is still growing is saying something isn't it?

Is this what a Big Data dystopia will be like? Should we allow that to happen? Are we even in a position to prevent this from happening? Who knows, maybe Big Data can help us out here as well!

information to the Big Data pool somewhere or the other already.

Keystones

There are two keystones that the above endeavours depend on – both self-supporting – and those are Big Data and localisation. Big Data because your business will be nothing without it, and localisation because it's the little niches where you're making the most money, hundreds and thousands of little niches. Targeted advertising is just one example of a service that's making money off niches (where do you think Facebook got the $19 billion for WhatsApp?).

Big Data is a concept that's entirely based on localisation. The whole point is to give you (or the controller of that data) the information to respond to any scenario with the most appropriate response.

The Earth is a world of individuals, people with needs and desires that are unique to themselves. Big Data can give someone the power to fulfil that need, exploit that desire and even hold that individual hostage. Accomplishing any of the aforementioned tasks is not easy, but it is possible.

As someone who intends to make Big Data work for them, you're responsible for the people you serve. Treat the data with respect, treat the individual with respect, offer your audience a service that offers something of value in exchange for that data and you will have a money-spinning idea of unparalleled efficiency (Steam anyone?).

Street smart

78 **Price watch** We've covered smartphones this time and that too from various price brackets

80 **Killer rigs** Your next PC should have these components! Check out our build recommendations

Give your desktop PC a boost in just 10k

Your old and dusty desktop may just sprint like a royal stallion if you show some care and spend a little dough. Not much, just a little.

Agent 001
agent001@digit.in

For the past few months, I've been getting a lot of queries from you all requesting cheap, not-so-expensive desktop upgrades that would really give it some much needed performance muscle. I've gotten so many queries on this subject that I can't delay answering it any further, and here's an article dedicated to giving all you slow-coach desktop PC users some fuel and fire to feel you're using a brand new PC.

First order of business – stop whining about your old-ish desktop PC and infuse new life into it without breaking the bank. At just ₹10k, I suggest several combos that are guaranteed to pump up your PC's performance by several notches. I kid you not. You know it's time reinvigorate that desktop, and give it some much needed love that it deserves. So just get to it.

1) SSD boost at ₹10k

If your hard drive isn't sprinting as fast back when it was new, maybe it's high time to replace it. And don't just replace it with another high-capacity hard drive, spare some thought to its spin speed and overall performance.

For this I recommend a combo deal, replacing your existing hard drive with a high-speed SSD and a high-speed hard drive. Install the OS and all highly-frequented apps and software on the SSD, and use the hard drive predominantly for data storage. But remember a faster hard drive will let you fetch data faster!

Samsung 120GB 840 Evo series SSD selling at ₹5,599. And the Seagate Barracuda 1TB hard drive selling at ₹3,820.

The balance 600 odd rupees can be used to buy an awesome sledgehammer to blow your old hard drive to bits!

2) RAM boost at ₹10k

I'm assuming that you have a DDR3 enabled motherboard to work with. In that case, if you've been only subjected to a paltry offering of 2GB or 4GB of system RAM so far in your desktop, it's high time upgrade. No time to waste.

I recommend the Kingston HyperX 8GB (KHX1600C10D3B1/8G), since we've played around with it in our test centre for quite a bit. It's a good, solid 240-pin DDR3 RAM module clocked at 1600MHz.

The Kingston HyperX 8GB (KHX1600C10D3B1/8G) is selling for a price of ₹5,480. Don't worry, its street price is definitely lesser than ₹5k.

And buy two of these. Because 16GB is definitely better than 8GB, right?
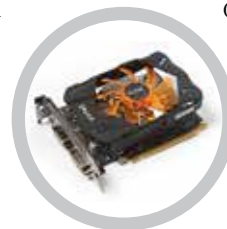
3) Graphics boost at ₹10k

Not much to debate about here, as there's only graphics card that is all the rage at the ₹10k price point. And it's NVIDIA's 750Ti. Buy the ZOTAC GeForce GTX 750Ti graphics card with 2GB GDDR5 discrete memory. You get DirectX 11.2 support, DVI ports, mini HDMI support and 2 years of warranty. Good enough for your next PC upgrade cycle, and definitely capable of handling all latest game releases.

Zotac GeForce GTX 750Ti selling at ₹10,998. This is the best online price, but trust me that street price of this GPU is under the ₹10k mark.

4) Boost your display at ₹10k

If you haven't joined the rest of us who enjoy HD goodness, it's high time that you do. And I have just the right monitor for your PC's full-HD setup. The BenQ GW2255HM is a great monitor to have under ₹10k. Its LED-backlit LCD on a VA panel, which is obviously not as great as an IPS panel, but great for gaming or multimedia sessions. We've reviewed the monitor and have had only good things to say about it. You can't go wrong with it, that's for sure.

Benq GW225HM monitor is selling at a price of ₹9,102.

5) Audio at ₹10k

Your stairway to audio heaven starts by replacing your existing speaker system (and satellites) as glorified paperweights, cleaning the wax out of your ears and investing in a good 2.1 speaker set –

yeah, 5.1 is too overrated and not in your budget, anyway, so don't even bother.

My speaker of choice is the Klipsch ProMedia 2.1, which is hands down the best performing speaker set we've heard around the ₹10k price bracket. All genres of music is reproduced clearly and without any distortion even at higher volume levels, which is high praise for this set. You won't go wrong with this one. Yeah, we cheated a little bit, as it isn't exactly available under ₹10k, but through discount coupons, or dialing up retailers, maybe you can get lucky and get this one at the price. Klipsch ProMedia 2.1 speaker set selling at ₹12,500.

Relax, if you can't stretch your budget, I have you covered, too. Look no further than the Harman Kardon Soundsticks III multimedia speakers – not only do they look good, but they're also good on overall performance. Go ahead, treat yourself to audio nirvana mixed with visual brilliance!

Harman Kardon Soundsticks III is selling at a price of ₹9,199.

Which is better? Nokia Lumia 525 or 630?

I am confused on which phone to purchase between the Nokia Lumia 525 and Lumia 630, because I don't know their key differences. I am a moderate user but I don't want my phone lagging or having low memory. Also, is the Moto G better than Sony Xperia E?
– On Ask Digit

A There isn't a lot of difference between the Lumia 525 and Lumia 630 , if you compare their specs head on. However, the Lumia 525 is slightly better than the Lumia 630 when it comes to gaming and running multiple apps.

Nokia Lumia

So to answer your question, if you aren't into heavy gaming or multitasking, Lumia 630 is better than Lumia 525. It's a nicer, well-polished, better looking phone as well.

As far as the second part of your question goes, yeah, hands down the Moto G is a lot better than the Sony Xperia E.

Which Dell or HP laptop?

I'm a student from Lucknow, going to start my B.Tech. this fall, majoring in ECE. And now... I need a new laptop. My budget is ₹45k, give or take ₹5k at max.

The Dell Inspiron 15R 5537

What I need is the following:
1. 14 or 15-inch Anti-fingerprint magnet screen (If possible 1080p resolution)
2. A dedicated graphics card. (for software like MATLAB - I'm not an extensive gamer but 2 GB will suffice)
3. A possible 4GB + memory. (SSD?)
4. *Fully Backlit keypad (Important point)*
5. 4th generation processors.
Brand preferences : Dell and HP
–Sam

A Hey Sam,
None of the laptops come with an HD screen at your price bracket, as far as I know. So you'll have to stick to a 1366 x 768 screen machine, which is pretty much the standard offering as far as most laptops are concerned.

Backlit keys and SSD is also a no go at that budget because they're premium offerings found in laptops priced well over ₹60k.

Having gone through a few e-commerce websites, I came across the following two options according to your brand preference.
1. HP HP Pavilion 15-N209TX
- 4th Gen Intel Core i5 4200U processor, 4GB RAM, 1TB HDD, 2GB NVIDIA GT 740M graphics and pre-loaded with Win 8.1 http://dgit.in/1pr2x4Q

And the second one is
2. The Dell Inspiron 15R 5537
- 4th Generation Intel Core i5-4200U, 6 GB RAM, 1 TB HDD and 2GB AMD Radeon HD 8670M Graphics , along with Windows 8 pre-loaded. http://dgit.in/1ueEtjr

I like the Dell slightly better than the HP. All the best with your studies!

Which speaker to purchase? And about Micromax phones.

I'm planning on buying a system but am stuck with selecting the appropriate speaker system for my PC. I have two options:
1   I can buy a 2.1 speaker and install a sound card or
2   I can buy a 5.1 and exclude the sound card Please tell me what should I do.
I am also planning on buying a mobile for ₹15,000 but I don't know what to buy. I thought of buying a Micromax mobile but my friends told me that some of them had already purchased Micromax and had frequent problems so they are telling me not to buy it
Please tell me if this is true? Please suggest me a 5-inch mobile phone.
– Evan Abhishek

A 5.1 speakers are useful only if you are going to actually take the trouble of positioning them properly in your room. They're also only good for movies that are actually encoded in 5.1 audio. Listening to music on 5.1 speakers is quite useless so it totally depends on what you are going to use them for.

As for your second question mobiles from local manufacturers are good when it comes to specifications and value for money at the time of purchase. However, they need more love and care while handling compared to more established brands. If you uses phones very carefully then you should be OK. Why not consider the Moto G or XOLO Q1000? Both good phones as per our tests.

SPEND SMART

Smartphones by every manufacturer across every platform from every price bracket!

SMARTPHONES BETWEEN ₹5,000 TO ₹10,000

Brand	Model	Operating System	Processor (in MHz)	RAM	Display Size (in inches)	Primary Camera (MP)	Battery Rating (in mAh)	Price (in ₹)
Alcatel	Onetouch Idol Mini 6012D	Android 4.2	1.3 GHz Dual Core	512 MB	4.3 inch	5 MP	1700 mAh	9,880
BlackBerry	Curve 9220	BlackBerry OS 7.1	NA	512 MB	2.44 inch	2 MP	1450 mAh	8,999
Datawind	PocketSurfer3G5	Android 4.0	1.2 GHz Dual Core	512 MB	5 inch	5 MP	NA	5,990
Gionee	Pioneer P4	Android 4.2	1.3 GHz Quad Core	1 GB	4.5 inch	5 MP	1800 mAh	8,901
HTC	Desire 310 Dual SIM	Android 4.2	1.3 GHz Quad Core	512 MB	4.5 inch	5 MP	2000 mAh	9,875
iBall	Andi 4di	Android 4.0	1 GHz	512 MB	4 inch	5 MP	1700 mAh	5,800
Karbonn	Titanium S5 Plus	Android 4.2	1.3 GHz Quad Core	1 GB	5 inch	8 MP	1800 mAh	8,047
Karbonn	Titanium S5i	Android 4.2	1 GHz	512 MB	5 inch	8 MP	2000 mAh	5,699
Lava	Iris 406Q	Android 4.3	1.2 GHz Quad Core	1 GB	4 inch	5 MP	1700 mAh	6,899
Lenovo	A516	Android 4.2	1.3 GHz Dual Core	512 MB	4.5 inch	5 MP	2000 mAh	7,499
Lenovo	IdeaPhone A690	Android 2.3	1 GHz	512 MB	4 inch	3.14 MP	1500 mAh	5,699
LG	Optimus L5 II E450	Android 4.1	1 GHz	512 MB	4 inch	5 MP	1700 mAh	9,199
Micromax	MAd A94	Android 4.2	1.2 GHz Quad Core	512 MB	4.5 inch	5 MP	1800 mAh	6,297
Micromax	Canvas Doodle 3 A102	Android 4.2	1.3 GHz Dual Core	512 MB	6 inch	5 MP	2500 mAh	8,500
Micromax	Canvas 2.2 A114	Android 4.2	1.3 GHz Quad Core	1 GB	5 inch	8 MP	2000 mAh	8,388
Motorola	Moto E	Android 4.4	1.2 GHz Dual Core	1 GB	4.3 inch	5 MP	1980 mAh	6,999
Nokia	Asha 503	Nokia v1.1 (Asha)	NA	NA	3 inch	5 MP	1200 mAh	6,050
Nokia	Lumia 525	Windows Phone 8	1 GHz Dual Core	1 GB	4 inch	5 MP	1430 mAh	8,910
Nokia	Lumia 630	Windows Phone 8.1	1.2 GHz Quad Core	512 MB	4.5 inch	5 MP	1830 mAh	10,000
Nokia	X	Nokia X Software Platform v1	1 GHz Dual Core	512 MB	4 inch	3 MP	1500 mAh	6,594
Nokia	X+	Nokia X Software Platform v1	1 GHz Dual Core	768 MB	4 inch	3 MP	1500 mAh	7,699
Panasonic	T21	Android 4.1	1.2 GHz Dual Core	1 GB	4.5 inch	8 MP	1700 mAh	8,999
Panasonic	T31	Android 4.2	1.3 GHz Quad Core	512 MB	5 inch	8 MP	2000 mAh	9,850
Samsung	Galaxy S Duos 2 S7582	Android 4.2	1.2 GHz Dual Core	717 MB	4 inch	5 MP	1500 mAh	8,099
Samsung	Galaxy Star Pro S7262	Android 4.2	1 GHz	512 MB	4 inch	2 MP	1500 mAh	5,359
Sony	Xperia E1	Android 4.3	1.2 GHz Dual Core	512 MB	4 inch	3 MP	1700 mAh	7,990
Sony	Xperia E	Android 4.1	1 GHz	512 MB	3.5 inch	3.2 MP	1530 mAh	6,099
Spice	Stellar Pinnacle Pro Mi-535	Android 4.2	1.2 GHz Quad Core	1 GB	5.3 inch	8 MP	2550 mAh	9,969
XOLO	Q1000 Opus	Android 4.2	1.2 GHz Quad Core	1 GB	5 inch	5 MP	2000 mAh	8,170
XOLO	Q700S	Android 4.2	1.3 GHz Quad Core	1 GB	4.5 inch	8 MP	1800 mAh	8,520
XOLO	A500S IPS	Android 4.2	1.3 GHz Dual Core	512 MB	4 inch	5 MP	1400 mAh	5,999

SMARTPHONES BETWEEN ₹10,001 TO ₹23,999

Brand	Model	Operating System	Processor (in Mhz)	RAM	Display Size (in inches)	Primary Camera (MP)	Battery Rating (in mAh)	Price (in Rs.)
Alcatel	Onetouch Idol X+	Android 4.2	2 GHz Octa Core	2 GB	5 inch	13 MP	2500 mAh	16,999
BlackBerry	Z10	BlackBerry 10.1	1.5 GHz Dual Core	2 GB	4.2 inch	8 MP	1800 mAh	16,990
BlackBerry	Q5	BlackBerry 10.1	1.2 GHz Dual Core	2 GB	3.1 inch	5 MP	2180 mAh	17,990
Gionee	Elife E5	Android 4.2	1.5 GHz Quad Core	1 GB	4.8 inch	8 MP	2000 mAh	17,999
Huawei	Honor 3C	Android 4.2	1.3 GHz Quad Core	2 GB	5 inch	8 MP	2300 mAh	14,999
Karbonn	Titanium S9	Android 4.2	1.2 GHz Quad Core	1 GB	5.5 inch	13 MP	2600 mAh	12,700
LG	G Pro Lite D686	Android 4.1	1 GHz Dual Core	1 GB	5.5 inch	8 MP	3140 mAh	16,999
Motorola	Moto G 16GB	Android 4.4	1.2 GHz Quad Core	1 GB	4.5 inch	5 MP	2070 mAh	13,999
Nokia	XL	Nokia X Software Platform v1	1 GHz Dual Core	768 MB	5 inch	5 MP	2000 mAh	10,403
Nokia	Lumia 625	Windows Phone 8.1	1.2 GHz Dual Core	512 MB	4.7 inch	5 MP	2000 mAh	14,400
Panasonic	P81	Android 4.2	1.7 GHz Octa Core	1 GB	5.5 inch	13 MP	2500 mAh	17,020
Samsung	Galaxy Core I8262	Android 4.1	1.2 GHz Dual Core	1 GB	4.3 inch	5 MP	1800 mAh	10,949
Samsung	I8552 - Galaxy Grand Quattro	Android 4.1	1.2 GHz Quad Core	1 GB	4.7 inch	5 MP	2000 mAh	14,460
Samsung	Galaxy S4 Mini I9192	Android 4.2	1.7 GHz Dual Core	1.5 GB	4.27 inch	8 MP	1900 mAh	16,490
Samsung	Galaxy Mega 5.8 I9152	Android 4.2	1.4 GHz Dual Core	1.5 GB	5.8 inch	8 MP	2600 mAh	17,999
Sony	Xperia C	Android 4.2	1.2 GHz Quad Core	1 GB	5 inch	8 MP	2330 mAh	16,500
XOLO	Q1100	Android 4.3	1.4 GHz Quad Core	1 GB	5 inch	8 MP	2000 mAh	12,824
Sony	Xperia T2 Ultra	Android 4.3	1.4 GHz Quad Core	1 GB	6 inch	13 MP	3000 mAh	22,940
Motorola	Moto X 16GB	Android 4.4	1.7 GHz Dual Core	2 GB	4.7 inch	10 MP	2200 mAh	23,999
Micromax	Canvas Knight	Android 4.2	1.7 GHz Octa	2 GB	5 inch	16 MP	2350 mAh	22,350
Samsung	Galaxy S4 Zoom SM-C1010	Android 4.2	1.5 GHz Dual Core	1.5 GB	4.3 inch	16 MP	2330 mAh	23,999
Apple	iPhone 4S (8GB)	iOS 7	A5 Chip	NA	3.5 inch	8 MP	NA	23,120

SMARTPHONES ABOVE ₹25,000

Brand	Model	Operating System	Processor (in Mhz)	RAM	Display Size (in inches)	Primary Camera (MP)	Battery Rating (in mAh)	Price (in Rs.)
LG	Google Nexus 4 (16GB)	Android 4.4	1.5 GHz Quad Core	2 GB	4.7 inch	8 MP	2100 mAh	25500
LG	Google Nexus 5 (16GB)	Android 4.4	2.3 GHz Quad Core	2 GB	4.95 inch	8 MP	2300 mAh	28999
LG	Google Nexus 5 (32GB)	Android 4.4	2.3 GHz Quad Core	2 GB	4.95 inch	8 MP	2300 mAh	32999
LG	G2 D802	Android 4.2	2.26 GHz Quad Core	2 GB	5.2 inch	13 MP	3000 mAh	32999
LG	G Pro 2 D838	Android 4.4	2.3 GHz Quad Core	3 GB	5.9 inch	13 MP	3200 mAh	38990
Samsung	Galaxy S4 I9500	Android 4.2	1.6 GHz Quad Core + 1.2 GHz Quad Core	2 GB	5 inch	13 MP	2600 mAh	28549
Samsung	Galaxy Note 3 Neo	Android 4.3	1.7 GHz Dual Core + 1.3 GHz Quad Core Hexa Core	2 GB	5.5 inch	8 MP	3100 mAh	28600
Samsung	Galaxy Note 3 N9000	Android 4.3	1.9 GHz Quad + 1.3 GHz Quad	3 GB	5.7 inch	13 MP	3200 mAh	48349
Nokia	Lumia 1020	Windows Phone 8.1	1.5 GHz Dual Core	2 GB	4.5 inch	41 MP	2000 mAh	50999
Apple	iPhone 5S (32GB)	iOS 7	A7 64-bit chip	NA	4 inch	8 MP	NA	61000
Apple	iPhone 5C (32GB)	iOS 7	A6 chip	NA	4 inch	8 MP	NA	51500
BlackBerry	Z30	BlackBerry 10.2	1.7 GHz Dual Core	2 GB	5 inch	8 MP	2880 mAh	34900
Sony	Xperia Z1	Android 4.2	2.2 GHz Quad Core	2 GB	5 inch	20.7 MP	3000 mAh	39990
Sony	Xperia Z2	Android 4.4	2.3 GHz Quad Core	3 GB	5.2 inch	20.7 MP	3200 mAh	48990
HTC	One M8	Android 4.4	2.5 GHz Quad Core	2 GB	5 inch	5 MP	2600 mAh	49990

digit KILLER RIGS

Everything you'll ever need to build your own PC. Whatever your budget.

■ Basic rig = ₹25,179   ■ HTPC = ₹28,777   ■ Entry-level gaming = ₹40,596   ■ Mid-range gaming = ₹63,678   ■ Ultra high-end = ₹2,86,502   ■ Optional Accessories= ₹41,412

BASIC RIG

Component	Item	Price
Processor	Intel Pentium G2020	3250
Motherboard	Gigabyte GA-H61M-D2H	3000
RAM	Corsair 2GB DDR3 1333MHz	1600
HDD	Toshiba 500GB	3200
Monitor	AOC E2043FSK	6300
Graphics Card	None	0
Cabinet	NZXT Gamma	2490
PSU	Corsair VS450	2175
Speaker (2.1)	Creative SBS A120	1590
Optical Drive	Samsung SH-224DB/IDDS	1049
Mouse	Amkette Ash Black (Bundle)	525
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
Total		₹25,179

HTPC

Component	Item	Price
Processor	AMD A8-5600K	6950
Motherboard	MSI FM2-A75MA-P33	4423
RAM	Kingston HyperX Blu DDR3 4 GB	3000
HDD	Western Digital WD20EZRX 2TB	5975
Monitor	None (your TV)	0
Graphics Card	None (HD7560D onboard)	0
Cabinet	Cooler Master Elite 120 Advanced	2977
PSU	Cooler Master Thunder 450W	2573
Speaker	None	0
Optical Drive	Samsung SH-224DB/IDDS	1049
Mouse	Microsoft Desktop 2000 wireless combo	1830
Keyboard	Bundled	0
Sound Card	None	0
Total		₹28,777

ENTRY-LEVEL GAMING

Component	Item	Price
Processor	AMD A10-6800K	8710
Motherboard	ASUS F2A85-M-LE	6200
RAM	G-skill F3-10600CL9S-4GBNT	2800
HDD	Seagate Barracuda 1TB	3699
Monitor	AOC I2251FWE IPS	8350
Graphics Card	None	0
Cabinet	NZXT Gamma	2490
PSU	Cooler Master Thunder 450W	2573
Speaker	F&D F680	4200
Optical Drive	Samsung SH-224DB/IDDS	1049
Mouse	Amkette Ash Black (Bundle)	525
Keyboard	Amkette Ash Black (Bundle)	0
Sound Card	None	0
Total		₹40,596

MID-RANGE GAMING

Component	Item	Price
Processor	Intel Core i5-3470	13500
Motherboard	Gigabyte GA-B75M-D3H	4599
RAM	Kingston HyperX 8GB (KHX1600C10D3B1/8G)	4900
HDD	Toshiba 1TB DT01ACA100	4000
Monitor	BenQ GW2255HM	8500
Graphics Card	ZOTAC GTX 750 Ti 2GB	11000
Cabinet	Antec One - S3	3300
PSU	Seasonic S12II 620 Watts	5750
Speaker	F&D F680	4200
Optical Drive	Samsung SH-224DB/IDDS	1049
Mouse	CM Storm Devastator (Bundle)	2880
Keyboard	CM Storm Devastator (Bundle)	0
Sound Card	None	0
Total		₹63,678

ULTRA HIGH-END GAMING

Component	Item	Price
Processor	Intel Core i7-4770K	21000
Motherboard	ASRock Z87 Extreme4	13816
RAM	ADATA XPG 2 x 4GB (2 Kits)	15000
HDD	WD WD30EZRX 3TB + Samsung 840 Pro 256 GB	21500
Monitor	BenQ BL3200	75000
Graphics Card	ZOTAC GTX 780 Ti	56400
Cabinet	NZXT Phantom 820	16836
PSU	Cooler Master V1000	15000
Speaker	Logitech Z906 5.1	24900
Optical Drive	LG Blu-ray WH16NS40 RW	6000
Mouse	Roccat Kone XTD	5250
Keyboard	Ttesports Poseidon	5300
Sound Card	ASUS Xonar Phoebus	10500
Total		₹2,86,502

OPTIONAL ACCESSORIES

Component	Item	Price
Surge Protecter	Belkin 8 Socket Surge Protector	1084
Controller	Xbox 360 Controller (wired)	2049
UPS	APC 1000VA - BR1000G-IN	8200
Webcam	Logitech HD Pro C920	6400
Headphones	Sennheiser PX 100-II	3817
Mousepad	Roccat Taito	625
Wireless Router	TP-LINK TD-W8968	2285
Sound Card	ASUS Xonar Essence STX	9540
External DVD-Writer	Lite-On eUAU108	1750
Thermal Paste	Arctic Silver 5 (3.5 grams)	600
CPU Cooler	Cooler Master Hyper 212X	2667
Fan Controller	Deepcool Rock Master V3	1695
Case Fan	Corsair AF120	700
Total		₹41,412

IMPROVE YOUR FACEBOOK UX

Schedule a Facebook post

Scheduling a post is a useful feature, particularly for those using social media to grow their business. If you're using Facebook Pages to manage a brand or organisation, then you have the ability to schedule your posts for up to six months in the future. You can schedule posts to appear at a time when you know your target audience is going to be online and has a greater chance of seeing it.

```
Go to your page >
Click 'Status' > Type
your message > Click
the clock icon below
the text box > Click the
calendar icon > Choose a
date > Type in a time.
```

Tips & Tricks has its own page numbers, and does not follow the rest of the magazine's page numbers. This is done to ensure that you can cut out and save T&T in a separate folder for later reference.

and have a huge amount of data uploaded to Facebook, such as large photos and videos.

Filter your News Feed

It would be extremely helpful to be able to control what posts you see on your wall. One application – Social Fixer – allows you to do exactly this. You can download it from http://social-fixer.com/download.html. Once downloaded and installed, it places a Social Fixer button on the top-right corner of your Facebook page. Clicking this will give you many options to filter your Facebook posts.

You can split the posts on your wall into tabs, hide posts that you've already read, view only the most recent posts,

Enter a date and time for your post that doesn't exist yet
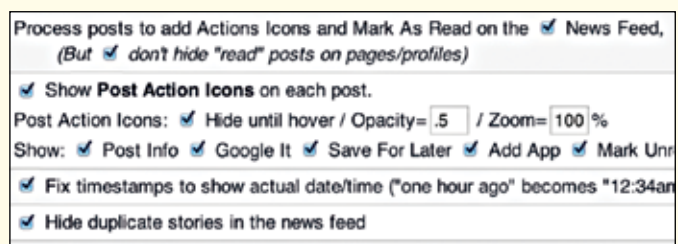
Play around with your filter options to feel powerful

To view, edit and delete your scheduled posts, `click on 'Activity' tab at the top of the page > Click on 'Scheduled Posts'`

For those egotistical social media fanatics looking to grow their networks, the scheduling feature is unfortunately not available on personal profiles. But that's what Twitter is for.

Backdate your Facebook posts

Facebook allows you to backdate your posts to fit in with the timeline you want to create. This is quite useful if you forgot to upload a photo or video, but still want your friends to see it along with the others so you don't appear clumsy and forgetful. With backdating, you can

get photos or status updates to appear consecutively on your timeline, without any gaps. To do this, you'll have to select and backdate each specific post.

`Go to the post > Click the down arrow in the top-right corner > Click 'Change Date' > Change the year, month, date and time.`

Download your Facebook data as a backup

It's always a good idea to back up your data. You never know when you might lose it, or want quick access to it, narcissistic soul that you are. Facebook allows you to download all the information that you've shared on it. This includes your personal and

contact information, followers, event and chat history.

`Go to any Facebook home > Click the down arrow in the top-right corner > Click 'Settings' > Click 'Download a Copy' > Click 'Start My Archive'`

You'll receive an email with a link to your download when your backup is ready. For security reasons, this link will only be valid for a few days. The download itself may take a while if you've been a Facebook hog

and get specific timestamps for posts, among other useful or pointless features, depending on how much of a geek you are. Best of all, the application is completely free and safe to use, and is vouched for by many users, most of whom are probably bigger geeks than you.

Preview complete photos without clicking on them

This may seem surprising, but few people enjoy squinting at
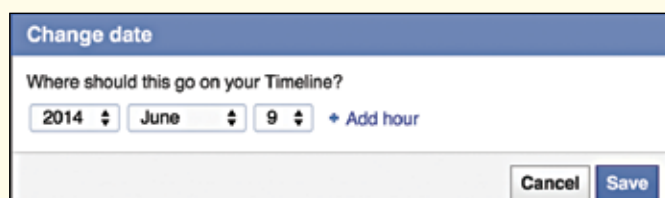
Change the date and time on your post to fool your subscribers

thumbnails in order to decipher them, or be forced to click on cropped pictures to view the full image. If you've already taken our advice and installed Social Fixer, then you'll already be able to preview complete images in a new window by hovering your cursor over the images without clicking them. For those of you who were put off by our praise of Social Fixer, there's 'Hover Zoom', available on the Chrome web store for free.

```
Open Chrome > Click
on 'apps' > Click on
'store' > Type 'hover
zoom' in the search box
> click 'Hover Zoom' >
'Add to Chrome'
```

The best part about Hover Zoom is that in addition to Facebook, it also works on Twitter, Flickr, Google, Imgur, Pinterest, Reddit, etc.

Change your Facebook theme

If you're the adventurous type, looking at Facebook's blue and white colours everyday can get monotonous. You can use Social Fixer (yes, again) to change your Facebook theme. To do this, `Click the Social Fixer icon > 'Theme' > Click on a theme to select it.`

It even allows you to import external themes by entering the theme URL.

Download Facebook videos

Some videos that you come across on Facebook are just too good to watch just once, and you feel like immediately downloading a copy for future viewing. Unfortunately, Facebook, being the selfish entity it is, doesn't provide a download option, and right-clicking on the video doesn't normally work either. This is where 'Downvids' comes to the rescue. This web application allows you to down-

load videos from Facebook and other sites with just a URL of the page that the video is on. Make sure that you first open the video in a new tab or window and then copy the URL of the web page.

Go to http://www.down-vids.net. `Paste the URL > Select the format > Click 'download' > Right-click 'Download this video' > Click 'Save'`

Save your Facebook contacts as a .csv file

Once upon a time, users were able to import their Facebook contacts into their email address books and then download them as a .csv file, but then providers decided to play spoilsport and remove this feature. You can still import your Facebook contacts, but can't export them in any form. Thankfully, there's a workaround in the form of an application called 'Friends to Gmail'.

Go to http://www.friend-stogmail.com. `Click 'Connect with Facebook' > Click 'OK' > Click 'Load Friends'.`

The application loads all your friends' contact information into a text box. Copy and paste this generated text into a text file on your computer and save it as a .csv file. If your text editor doesn't provide you with this option, save the document as a text file and specify delimiters like commas after each contact when you import the file into a spreadsheet. You can then save this as a .csv file while you laugh in triumph.

Generate mind-blowing analytics for your Facebook data

Wolfram|Alpha, the computational knowledge firm built by a genius, allows users to generate analytics based on their personal
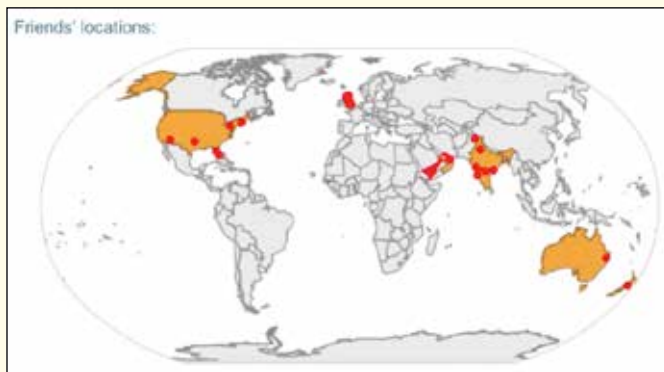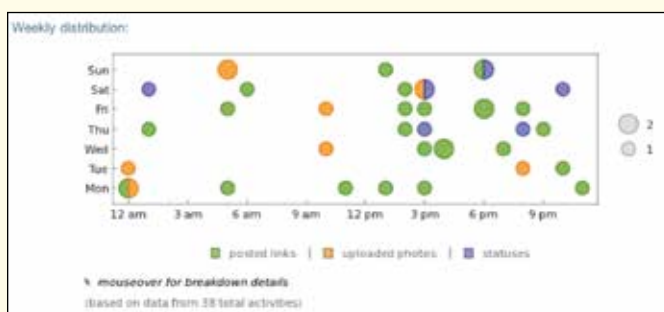
An example of the awesome plots available at your fingertips

data as recorded on Facebook. Apart from stats such as age, birthday and recent activity, you can view your friends' geographic, gender and age distributions, most common names, and how they're connected to each other. You can also view the total and average number of likes and comments per post, the length of each post, most liked post and word clouds. If you're a data geek, you can even copy or download the data and charts for your personal use.

Go to http://www.wolfra-malpha.com. `Type 'facebook report' > Click 'Analyse My Facebook Data'`

You'll be asked to authorise the app and register as a Wolfram Alpha user if you haven't used either of these before.

Remove ads from Facebook

The last thing normal people want to see when using Face-

book or any other site is a bunch of irritating ads. For Google Chrome and Safari users, the Adblock extension, available for free at https://getadblock.com, works really well.

Another option is Adblock Plus, which gives you additional options such as blocking recommended pages and links to suggested pages in Facebook.

Go to https://adblockplus.org/ and click on 'Install'.

Log out of Facebook when you close your browser

The best way to ensure you're logged out of Facebook when you close your browser is to uncheck the 'Keep me logged in' box when you log into Facebook. This is even more important when using a public computer.

Additionally, you can download the free 'Auto Logout' extension from the

Untick the little box for safety. This should be obvious

Chrome web store, which automatically logs you out of all accounts once you close your browser window.

```
Open Chrome > Click
on 'apps' > Click on
'store' > Type 'auto
logout' in the search
box > Click 'Auto
Logout' by devshop >
Click 'add' to Chrome.
```

The drawback is, of course, that you can only install this on a personal computer, so you still need to remember to log out of Facebook or uncheck the 'Keep me logged in' box on a public computer.

Send 1GB files over Facebook

The Pipe app is an easy-to-use feature that lets you send files up to 1 GB in size to friends who also have the same app. Think of it as Dropbox for Facebook. If you're offline when your friends send you files, you'll see them when you return online and access the app. There's also a Pipe extension for Chrome users.

```
Go to Facebook > Type
'Pipe' in search
```

Get Facebook chat on your desktop

Prior to 2012, Facebook Chat was only available by logging into Facebook, but you can now get it through a number of third-party instant messaging clients. If you want a dedicated Facebook desktop chat service, try Chit Chat (http://www.chitchat.org.uk). Other popular options are Adium for Mac users (https://adium.im) and Pidgin for Windows users (http://www.pidgin.im). Facebook has helpful instructions on setting up chat on any third-party client at https://www.facebook.com/sitetour/chat.php. Alternatively, if you have Skype you can simply connect to Facebook and import all your contacts. You'll have the additional

option of being able to speak to your friends.

```
Open Skype > Click
'Connect to Facebook'
> Click 'OK'
```

Prevent Facebook from using your browser history

Facebook uses cookies and other tools to access informa-
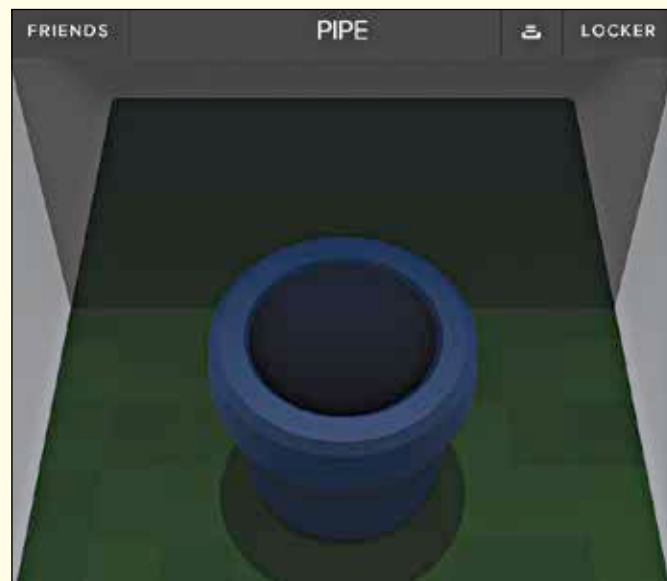
Click on the bottomless pipe to transfer files

tion stored on your browser. It does this to offer you personalised services and ads. However, some people find this lack of privacy uncomfortable. While the best way to protect your privacy would be to not have a Facebook account in the first place (Duh!), you could protect yourself by periodically deleting your browser history and cookies. Another means of protection involves visiting the Digital Advertising Alliance's site (http://www.aboutads.info/choices/) to opt out of targeted ads. You first need to enable cookies or disable Adblock on your computer.

```
Go to http://www.aboutads.
info/choices/. Select 'Com-
panies Customising Ads
For Your Browser' >
Check the 'Facebook'
box > Click 'Submit'.
```

GET BETTER PINGS

With more games focusing on the online multiplayer concept, quick communication between your computer, i.e. the client and the game server has become imperative. 'Ping' refers to the network latency between the client and the server. A low ping is always better than a high ping. Here's how to reduce your ping and improve your gaming experience.

Whitelist in your anti-virus/firewall

The last thing you need is for every data packet from your game to be analysed on the way

in and out by your anti-virus/firewall. It can add a tremendous overhead depending on which anti-virus you're using. Each antivirus or security suite comes with a whitelist option. This will allow you to choose software to be added to a list of programs to be ignored at all costs by the firewall. This reduces the time each packet has to spend in the clutches of an anti-virus before moving on, thus reducing ping.

Nagle's algorithm

Nagle's algorithm, which aims at improving efficiency by reducing the number of packets sent over a network, can increase your ping in several games. Online games send out a lot of data packets, which are small in size compared to what normal data packets can hold. So Nagle's algorithm combines these packets to send out one big packet as and when possible. Disabling Nagle's algorithm is easy in Windows.

- Run regedit.exe
- Navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\Tcpip\Parameters\Interfaces`
- You'll find many folders here – each labelled with a bunch of random numbers between curly brackets {}.

Ping Zapper works wonders for your popular games!

Browse through them till you find one which shows your IP address, your subnet address, DNS server addresses etc. This one folder should be linked to your ethernet adaptor.

- `Right-click on this interface > Select 'New' > DWORD (32-bit) Value > Name it "TcpAckFrequency" without the quotes. The letter case matters, so take care.`
- `Right-click on TcpAckFrequency value > Select 'Modify' > Enter "1" as the value and make sure the Hexadecimal base radio button is selected.`
- `Right-click on the interface > Select 'New' > DWORD (32-bit) Value > Name it "TCPNoDelay" without the quotes.`
- `Right-click on 'TCP-NoDelay' value > Select 'Modify' >`

A few registry entries is all it takes

`Enter "1" as the value and make sure the Hexadecimal base radio button is selected.`
- Verify that both values show up in the adapter's property list with "0x00000001" being the value.

- Exit Regedit and reboot the operating system.

Get a better ISP

Talk to your ISP and make a list of the game servers that you connect to for most of your games. See if you can find people in your vicinity that have internet connections from different ISPs and ping your game server list using each of their connections. You'll find that some ISPs route traffic better and this results in low pings. Then again, you won't find any one ISP that consistently has lower pings than all other ISPs so go with whichever games you feel are more important and pick an ISP that has low pings for most of those games.

Eschew wireless connections

Wired connections work way better when compared to wireless connections. Especially since objects moving in the path of the wireless connection do affect the travel time of packets. Switch to using the ethernet cable over your Wi-Fi connection whenever you're gaming. For all other activities including video calls, you don't have to worry since media heavy activities are transmitted via UDP as compared to TCP.

Many VPN servers have lots of dedicated routing servers

Use a VPN service

Reducing ping is all about changing the route which your packets take in order to get to the game server. Your ISP and all other entities along the route are the only entities that can actually change the routing so it's quite unlikely that an ISP will change its routing for just one consumer or even a hundred. Another way to change your routing will be to invest in a VPN service. VPN services have quite a few servers across many countries that all have optimised routing to their own servers. So these services can get your packets across continents in the most efficient way. But the two points where the packets are actually outside the VPN's network will still affect your latency and you have no control over this.

There are a multitude of VPN services, which offer free and paid services. The difference is that the free services are limited sessions so you'll have to re-login to your game every 30-60 minutes. The payment plans aren't expensive either – they sell for as low as $9.99 (approx.₹600) per month. This includes apps for every platform, which extends the VPN service to all your mobile devices as well. VyperVPN, CactusVPN, IronSocket and AirVPN are such services. You can also pick free software which might, in some cases, turn out to be better than paid services. Each software has a trial period which you can use to test out if they route better or not.

Then there are VPN services specific to games. Take 'PingZapper'. It has a free service that disconnects every 90 minutes but the traffic routing isn't that great on the free service. Payment plans start from $3.99 (Rs.240) and as soon as you become a premium customer you're switched to better routing. We used this service and found that it shaved off 200ms off Asian servers for *World of Tanks* and *Dota 2*.

Toolbox

Workshop
When a single power supply just can't cut it, here's how you combine the power of two to satiate your PC

88

Google Domains out
Google finally launched its own domain hosting service with invite-only access
http://dgit.in/GoogleDomainsBeta

New laptop acting up, upgrading obsolete monoliths, finicky reboots and upgrade queries

All in a day's work for the Digit Test Centre

Brand new laptop woes

Well the laptop is Dell Inspiron 15R 5537 with Windows 8.1 preloaded. But just within a week or so I faced certain problems. Can you help me fix these? Are these normal? Do I need to be worried?

1. Took a lot (3min 45 sec) to boot yesterday. Worked fine after that.
2. The laptop occasionally hangs, stops responding, which is frustrating.
3. Certain Websites on IE (Metro version) do not show up until you click on 'fix connection'.
4. I haven't loaded any bloat-ware or data on it as yet. Just testing it.

Does it look serious? Should I be worried? Thanks. I'm anticipating your reply.

–Sam

A Hey Sam,

1. If it's the first time you booted your laptop (unbox and first use scenario), then the booting and Windows launch does take a bit of time. Upwards of 3 or 4 mins. But it works fine afterwards, as you noticed, and it's nothing to worry about. However, if this happens at every reboot or cold boot (complete shutdown and then start again), then something's not right.
2. Definitely not normal behaviour.
3. Which websites are these? This must be down to your problematic net connection, in all probability.
4. Good habit. :)

Point #1 and #2 are definitely serious, enough for you to start considering a replacement for your machine – since you bought it recently and it's brand new, within warranty, etc.

I think you should get your laptop fixed or replaced under Dell's warranty terms. Let me know how it goes.

EMI component upgrades

Hi Team Digit,
I think that my RAM needs to be upgraded. I need your team's help. I want an 8 GB RAM around ₹5000.

My computer's specifications:
- OS: Windows XP SP 2
- CPU: Intel Pentium E2200@2.2GHz
- Old RAM:2 GB single channel DDR3 @ 399MHz(6-6-6-15)
- Motherboard: Biostar G41D3C
- GPU: NVIDIA GE FORCE 210
- HDD: 80 GB Internal HDD
- 1 TB external hard drive

I know this PC is obsolete but my mother said you can only upgrade one part per month only.

–Anany Prakhar

If you see a puffed capacitor, watch out!

A Hey Anany,
You're indeed in a conundrum. You see the particular motherboard and CPU combo results in support for 800 MHz RAM only. This is because of the CPU of yours which has an FSB of 800 MHz can only support RAM of the same of lower FSB. Even if you do buy modules which are rated higher they'll be forced by the motherboard to run at 800 MHz. This too, is not a fool-proof

solution. In all likelihood it might not work at all. We've couldn't even find the modules in nearby online stores.

If your parents have asked you to upgrade one component at a time which is a wonderful idea in itself, then we'd suggest coming up with a configuration now and then slowly put your computer together as time goes by. This way you can purchase the motherboard this month, then the processor two months later (since they are comparatively expensive) and then the RAM the month after that. This way in about 8-10 months you can completely upgrade your computer.

First time PC builder

Hi, this is the first time I am building a PC, so I need your help.

Could you tell me whether the configuration is compatible and suggest me a PSU for the same

My configuration would be:
- Processor: Intel Core i3-4130 3.4 GHz
- Motherboard: Gigabyte GA-B85-D3H processor
- RAM: Kingston KHX1600C10D3B1/8G or
- Kingston KHX1600C9D3B1/4G
- DVD writer: LG GH24NS95 or
- Samsung SH -224DB
- HDD: Toshiba DT01ACA100
- Cabinet: Antec One S3

Is this configuration computable with each other and could you tell me a power supply unit for this! And a budget monitor also. Please check my configuration and help me in PSU and Monitor and The compatibility of the configuration. Hope you could help me soon as possible as I am planning to build in this week and waiting for your green signal.

Thanking you in advance

–Gandhar Gosavi

NASA to redirect asteroids
Planning to extend its research, NASA is going to capture asteroids and study them
http://dgit.in/SZvI0G

Scan and Design Food
Nestle trying to develop a device that can scan and design food according to the nutrient needs of people **http://dgit.in/DesignedFood**

A Hey Gandhar,
The motherboard you've mentioned doesn't exist. You must be talking about the Gigabyte GA-B85**M**-D3H. The Flipkart listing you've provided has it wrong, unfortunately. If you look closely at the image you can see the proper model name. This particular motherboard does support your processor and the RAM you've short listed is on their QVL list as well which means it should work straight out of the box without any worries. For the current configuration a power supply of about 400-450 W is more than enough, the Seasonic S12II 430 is one that has received plenty of positive reviews. You can even run a mid-range graphics card easily on the same power supply. As for the monitor you can go with the BenQ GW2255HM which we recently reviewed and was found to be quite good for the price. Everything else seems fine and compatible.

Getting the right motherboard is crucial

Upgrading Mac graphics
I want to update the graphics card of my Mac but I simply can't find any graphics updating software for Intel GPU. I searched it online and they said that you have to update it by updating your software and the update notification will come on the software update bar in the Mac OS X menu but it never comes. I was thinking of downloading it externally but I can't find it anywhere. Please tell me if there isn't any update for that graphic card. Or give me a way of updating my graphics.
My graphic card info:
- GPU: Intel HD Graphics 3000 384 MB
- Memory 4 GB 1333 MHz DDR3
- Processor 2.4 GHz Intel Core i5
- Software Mac OS X Lion 10.7.5 (11G63)
Regards,
–Debasmith Mandal

A Hey Debasmith Mandal,
Your computer doesn't have a discrete graphics card. The Intel HD Graphics 3000 is an on-chip-GPU which means that it is embedded in your processor. You can update your drivers if you are running Windows in Bootcamp. Otherwise, for OS X the updates are provided with the OS X software updates. http://dgit.in/1hQd0nY

For Windows you can download the drivers from Intel's website (The latest version at the time of writing this is 15.28. 22.64.3517).

http://dgit.in/1n8TIYw

You cannot upgrade your graphics card if you're on a iMac/Macbook easily since most of the parts sport a form factor that's suitable for Mac devices, you can however, do so if you are on a Hackintosh. For an iMac you'll first have to figure out if your particular iMac does allow for an upgrade and then take it from there. The other solution is to buy a ViDock + Sonet Echo Pro or similar hardware which allows you to use a graphics card externally.

Windows booting issue
Sir, I made a bootable USB to install Windows 8 on my PC. When my PC boots from the USB, the installation process stops at the Windows logo and nothing happens any further. Please help.
–Anshuman Kumar

A Hey Anshuman,
Make sure you are using the official USB to DVD tool from Microsoft. Also, ensure that the USB device is connected to a USB 2.0 port to ensure that there are absolutely no problems during the setup. Third party chipsets driving USB 3.0 don't function well till the proper drivers are installed which in turn can only be accomplished once Windows installation in done with.

PC startup issue
Hi Guys, I have a PC with LG monitor, Logitech Mouse, ADCOM keyboard, Zenith CPU and no UPS.
System:
- Intel(R) Pentium (R) D CPU 2.80 GHz
- RAM- 2 GB
- 32 bit OS
- Windows 7 ultimate
Problem- Whenever I turn off my com-

puter I can't start it back within 20 mins. If I start it within 20 mins of turning off it stops in the starting screen where the four dots (Red green blue and yellow come on). It stops there and never continues and I have to directly turn off my PC. Please tell me something that I can do to correct it.
–Joy Prakash Hindocha.

Use a graphics card externally using an enclosure like this one

A Hey Joy,
This problem reeks of a faulty capacitor. This may be the case with your motherboard or with your power supply. You will have to test them out individually. The waiting period is simply for the capacitors to drain properly. Have a look at the motherboard and see if you can find any bloated capacitors. The top portion of the capacitors will be slightly bloated.

A word of caution, do not touch any capacitor inside your PC's cabinet and on your motherboard. Especially the ones inside your power supply, they store a very high amount of electrical charge which can be fatal. We suggest that a trained professional should do the same. If you are absolutely sure about doing this yourself then power down your computer and remove the cable from the wall socket. Now press the power button on the cabinet without plugging the wire in. This should drain some of the charge, then let the computer stand in this state for 3-4 days before opening up the cabinet. Once again, tread with caution.

File system error
Hi,
I just removed Windows 7 from Bootcamp and now I only have MAC OS X 10.9. And I have Western Digital: My Passport 1TB

Coursea goes mobile
The online learning environment has been brought to the mobile platform in both iOS and Android
http://dgit.in/CourseraFreeApp

3D weaved shoe soles
A patent pending 3D weaving device can create complex patterns that can be used as shoe soles and stab-proof vests **http://dgit.in/3DWeavingDevice**

Q&A

external hard disk, the problem is that I'm only able read/write into the hard disk only via Windows and not via Mac.

I know the problem is with the file system, Mac is FAT and Windows is NTFS. But can you recommend me a software or a driver that would enable me to write into the hard drive with Mac?
–Brijrajsinh Gohil

A Hey Brijrajsinh Gohil,
You can format the hard drive as HFS and then use a software called HFS Explorer to access the files in Windows. This way you'll have to carry a separate pen drive with HFS Explorer which you'll have to install if you wish to access the said hard drive on any other computer.

Q I have an internal hard drive of 320GB. I want to extend the C: Drive which is mere 20GB (to atleast 100GB). Let me know how can I do the same.
*-Bijaya Giri*

A Resizing your hard drive is pretty easy in all operating systems. Start off by right-clicking on 'My Computer' and select 'Manage'. In the computer management console on the left-hand section you'll find a header that says

'Storage', click on it. On your right you'll see all hard drive partitions listed. You'll first need to shrink the other drive by whatever size you need to increase the first partition with. If you can't gather enough space you'll need to clear your USN journal and then de-fragment your drive just to get all the data together. Then proceed with shrinking the other partition by 80 GB (in your case). Once the shrinking process is done with, right click on the first partition which you wish to increase and select 'Extend'. This should eat up whatever space was generated from the previous process and resize your partitions. This method doesn't affect your program installation but it takes a lot more time.

A simpler approach would be to backup everything from the second partition before deleting it and extending the first partition, then you recreate the second partition again and restore the backup. This will unfortunately mess up your program installations (not all of them).

Q Hey everybody!
I had a system with Windows 7 installed. I had to change the motherboard and the process as the old ones were fried but when I started up my PC after installing
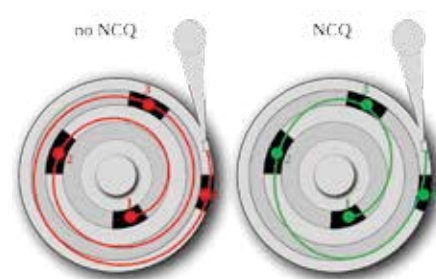
NCQ increases overall performance

the hardware I was not able to boot into Windows (It crashes on the "starting windows" screen and it restarts) but when I change the SATA controller mode to RAID it works fine. Which SATA mode do I need to choose? I have two HDDs installed [320GB(OS) + 1TB].

I have a pre assembled PC from HP with the following specs:
• MSI 7613 motherboard
• Intel Core i3 540
- Karan Verma

A You need to choose AHCI mode for SATA to primarily make use of two features; hot-swapping and NCQ. Hot swapping allows you to pull out your hard drives when the computer is running (Use the Safe to Remove option while doing so). Makes it work like a really bulky and large high-capacity thumb drive.

NCQ allows the hard drive to optimise the path that the head has to follow to access multiple portions of the hard drive. This reduces the time taken to transfer data. RAID is for when you put the two hard drives in combination to increase performance or generate redundancy or both.

You should always take a backup before swapping out the motherboard, however, in your case we assume your motherboard must have given away before you could have taken the backup. Now that you have everything working fine and dandy you might want to take a backup. Set the hard drive controller to AHCI and then proceed to restore the image, if it doesn't work you can still set it back to RAID and restore the images onto the individual drives. Or you can let it be and continue with your work. ◧
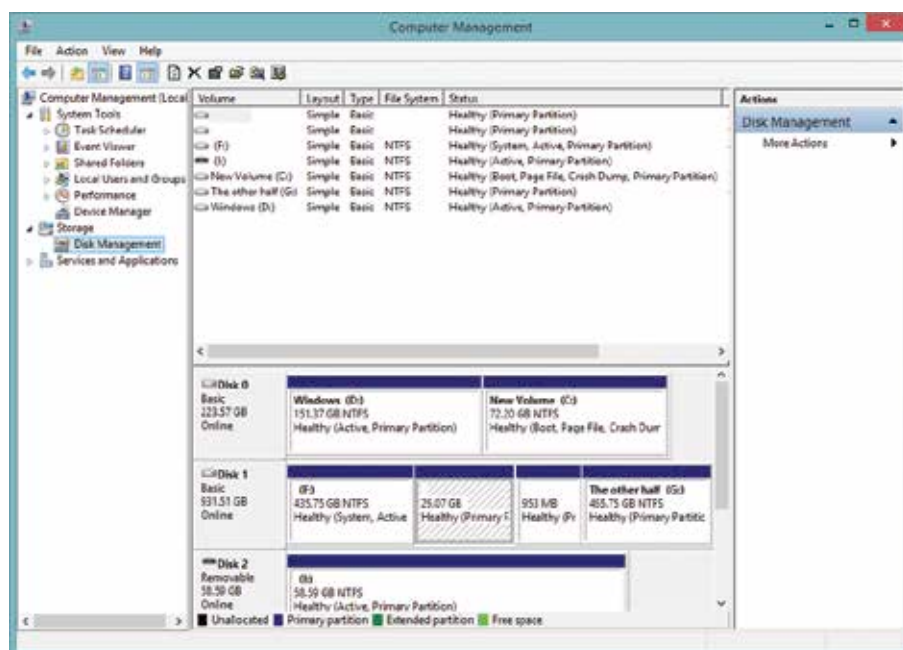
Resize your partitions easily using the management console

By our powers combined,
I'm Captain PSU

Chain two or more power supplies to get the extra juice for your workstation

Mithun Mohandas
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V
ery often we get to see computer configurations on various websites, forums and magazines. If you'd have paid attention then you'd have noticed that the PSU (Power Supply Unit) or the SMPS (Switching Mode Power Supply) is mentioned accounted for at the end of the configuration chart. This is because one needs to account for the power requirements of each and every component first and the calculate the cumulative power requirements for the entire system before deciding on the power supply. However, there is one thing that almost all of these configurations don't account for and that's the need for extra power in the future.

Imagine that you've built a massively powerful rig and you need all the processing ability that it gives you, a few years down the line you may want to add another graphics card or be a little adventurous and go for three graphics card. Now to run all of these cards (which may consume about 300W each) you need to buy a really expensive SMPS that can not only power all the cards with ease but also protect them from various electrical anomalies. This new power supply will cost you a bomb and considering that you've just purchased three top of the line graphics cards, adding another ₹20,000 to the bill is the last thing you'd want to do. Or you could simply connect two power supplies together and power

your system easily at a much lower cost. This is also known as "Daisy-chaining" of multiple power supplies and is quite popular with the folks that are into cryptocurrency mining. There are different ways you can go about getting the task accomplished, we'll be covering a DIY approach and also take a look at various after-market solutions available. In order to reduce any problems with this project ensure that the two power supplies are of the same brand and of the same series. This is to eliminate any chances of incompatibility for a wide variety of reasons.

1. Do It Yourself
This method requires that you have some experience with basic electronics. You won't have to go out of your way to learn an entire book for this workshop but if it means not blowing up what you're working on then we'd advise you to do a little reading on wiring, electricity loads, parallel and series configurations.

For the purpose of this method you'll need the following.
- 2x Female 24-pin ATX12V power connectors
- 1x Male 24-pin ATX12V power connector
- Wires that are at least 18 AWG for all pins other than pin-11. 22 AWG for pin-11. If the graphics cards consume around 300W then ensure all wires are 16 AWG.

A cable sleeving kit helps with the job
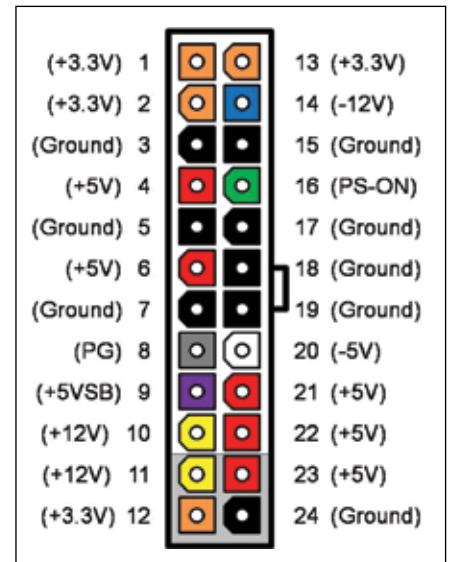
Follow the colour code to avoid mistakes

- ATX connector toolkit
- 2x 10 Ohm 10 Watt resistors
There is a standard for picking the colour for each pin in the ATX standard. Please refer the image above for the same, however, you can choose to ignore and go with whatever colour suits your fancy. Also, AWG (American Wire Gauge) stands for the thickness of the wires, do not compromise on this factor or you'll risk the wires burning out under high load conditions.

In order to link the two power supplies we need to branch out two wires from one power supply and link it to the other. These two pins are pin-16 (green) and pin-17 (black) as shown in the 24-pin ATX12V pinout diagram above. When these two pins are short-circuited the power supply turns on and when they are disconnected the power supply turns off. Ideally, you need to turn on both devices at exactly the same time to prevent current from flowing in the wrong direction.

Simply start out by cutting all wires down to the same length. There have to be 26 pieces of wires which are about 10 centimetres long. You can make them longer or shorter if you wish to route the cables according to your needs. Expose about 5mm of the wire on each end. Use the ATX connector toolkit to crimp the metal pins onto each wire. Ensure that the male and female ports are aligned the right way. You need to put an extra wire into pins 16 and 17 each for one female port. To make things clear.

- One female port to be connected to the male port pin-to-pin (Port 1 to Port 2)
- Pin 16 of the same female port is to be connected to pin 16 of the other female port (Port 1 to Port 3)
- Pin 17 of the same female port is to be connected to pin 17 of the other female port (Port 1 to Port 3)

When you're done the arrangement must look like the image below.

The finished project should look like this

All that's left to do now is to insert the 24-pin connectors from both power supplies into the contraption you just made. Then attach the male connector to your motherboard. Ideally, you should connect half the peripherals to one power supply and the rest to the other. Often, power supplies are designed such that load regulation mechanisms will cause the voltage level on one rail to be lower than what it should be if all rails are not loaded. Check the product documentation to figure out if this is the case for your SMPS. If yes, then you'll need to attach the two 10 Ohm resistors in parallel first, then connect the leads between 5 volts (red) and ground (black) on any cable of the power supply that isn't connected to the motherboard. We put two resistors in parallel so that the current is divided between the two resistors and the

Add2PSU comes with a relay switch

heat generated is also dissipated between the two resistors.

2. Third party solutions

Add2Psu is a simple connector that does the job of connecting two power supplies for you. All you need to do is insert the 24- pin connector of one power supply onto the board and a 4-pin molex connector of the other power supply onto the Add2Psu board.

The board is quite simple in design. The 4-pin molex connector triggers a relay switch which in turn short-circuits pin 16 and pin 17 of the 24-pin ATX connector, thus, switching it on as soon as the first power supply is turned on. Using this board you can chain as many PSUs as

you want. We've seen this being used extensively by folks mining cryptocurrency but three power supplies are the maximum that we've seen chained together in the system.

3. Specially designed PSUs

The last option is to buy power supplies that have been designed to be linked to each other. Antec's HCP (High Current Pro) series come with a feature called OC Link. Using this feature one can connect two such power supplies together without worrying about any parameters like load balancing rails or worrying about frequency tolerance.

Do take care while making this project and test the adaptor that you've made for continuity using a multimeter before you connect the device to your two power supplies. Ideally, it is preferred that you load the entire computer on one power supply and all the graphics cards on the other. For cryptocurrency mining ensure that all mining gear are equally distributed across all powersupplies.

We're eager to hear how this workshop turned out for you and if you've found out any other ways of combining two power supplies then do write in and let us know. ◧

Third-party solutions like Antec's OC link takes all the fuss and fun out of the job

To imagination and beyond

Jayesh Shinde
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"Before technology became mainstream, when it was brand new, every little iterative evolution of gizmo, gadgets and technological breakthrough seemed like the next best thing."

Hearing can be as good as seeing sometimes, especially if it's something said by a person you trust. The idea for this column came about in a conversation I had with Anirudh and Kunal, both of whom visited Taipei last month to cover Computex 2014.

According to both of them, and people they met during the course of their Taipei visit, the scope of Computex had drastically reduced from the previous year. Curiously enough I had heard similar undertones of shrinking glory from exhibitors and event veterans that I encountered at Computex 2013. "It's not the same as it was back in the day," is a statement I heard from several event regulars; it's something Anirudh and Kunal heard a lot this year as well. Mithun's experience of the India Gadget Expo held in Hyderabad also left a lot to be desired – if this was the best India could showcase, then heaven save our souls!

Looking at these personal experiences, it's hard not to conclude that mega events aren't just that mega anymore. Probably they're still huge when it comes to scale and volume of products on display and companies exhibiting under one roof, but they just don't have compelling products to excite people anymore. All you're treated to are minor enhancements in a product or technology, nothing that grabs your eyeballs and sows the seed of something truly pathbreaking. It's more evolutionary than revolutionary.

Languishing in the cesspool of mediocrity are we? Not at all. In fact, humans today are arguably caught in the best phase of innovation than they've ever been in their entire existence – we're living in the digital era after all – and everyone's caught in a rat-race to out-innovate each other. My problem is only with the scale of innovation that we're concentrating on.

Everyone's playing for the next quarterly report. Today's digital architects aren't doing something, building something different that has far-reaching effects and the capacity to knock your socks off. And that's a real shame.

Before technology became mainstream, when it was brand new, every little iterative evolution of gizmo, gadgets and technological breakthrough seemed like the next best thing. My first PC had 64MB of RAM and the jump to 256MB RAM seemed as worthy an accomplishment as reaching the moon. However, the phone that I use has more RAM than my laptop from 2008, and I don't remember getting any kick out of it. Because I didn't feel my phone was doing something extraordinary; that it was following a path of tech evolution that was laid before it several years ago. There was no wow factor. And I'm not alone to share this view about the ever-expanding world of tech as it touches every facet of our life. It's doing what it's supposed to do, what's there to harp about?

Extraordinary. In one word, that's what the technology world is lacking. Some of its sheen has worn off and tech has become ordinary because it's entering areas of our existence that we knew it would enter – through sci-fi books, companies' roadmaps, public disclosures, etc. That's what is evident through gadget shows, tech expos and company announcements over the last few years. All glitter and glamour, very little substance, and no vision to speak about.

Revolutionary, not evolutionary; radical changes, not iterative enhancements; that's what is required to rekindle our faith in the fact that we can dream and achieve great things through tech again, and not just focus our energies in making things faster, lighter, smaller, efficient, and all that jazz.

Renowned astrophysicist and now a popular television personality, Dr. Neil Degrasse Tyson argued in front of the US Senate in 2012 for bolstering NASA's budget and not clipping its wings by saying something very poignant, "The only people doing much dreaming back then (re: early space exploration era) were scientists, engineers, and technologists. Their visions of tomorrow derive from their formal training as discoverers." While technology has become mainstream and touched every facet our life, we lack genuine discoverers (perhaps with the exception of Elon Musk) amidst ourselves who can show us a great vision of what revolutionary change looks like rather than shovel iterative jazz that we've become so habituated to.

You never know how it could impact our lives, if that were to happen. If nothing else, at least we'd have much more exciting tech expos. And wouldn't that be a sight to behold! **d**

IMAGING: BAIJU NV

Thin 'n' light wonders

It doesn't get any better than thin 'n' light laptops when it comes to portable computing. A device with ultraportability, looks and performance to handle your computing needs. But which one's right for you?

Anirudh Regidi
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Using an equestrian analogy, you might be forgiven for thinking that a regular laptop is a workhorse and the Ultrabook the show pony, but you'd be wrong. An Ultrabook is more than just a device for show; it's a slim, sleek and light device that is generally quite stylish, but more importantly powerful enough to handle most of your computing needs. What's not to like?

The advances that Intel has made to processor architectures (with Haswell), is, arguably, single-handedly responsible for the Ultrabook as we know it today. Even one year ago it would have been quite a task to create a laptop that was slim and powerful and offered excellent battery life. If anything, the slimness of the design went against the Ultrabook concept because you'd end up with a sleek and powerful device that was only capable of lasting a couple of hours or more, and toasted your lap at the same time.

An Ultrabook promises the ultimate in portable computing, form and function. We focused on Ultrabooks priced around ₹1 lakh and come away quite impressed by the devices on offer. We were pleasantly surprised to find the performance characteristics to be quite similar (though the prevalence of the i5 4200U might have something to do with that) and we ended up focusing on features and usability to a larger extent.

FEATURES

DELL
Inspiron 14 7437

This was the largest and heaviest of the Ultrabooks, but also the most uninspired. It boasts of a very basic feature-set and limited connectivity options, surprising considering that slimmer and smaller devices offer much more. In fact, the largest laptop in the comparison is less feature-rich than the smallest. The one redeeming feature is the keyboard backlight, which is reasonably bright and comes with a dedicated control button that is quite convenient.

There's nothing really of note in terms of hardware, other than maybe the 6GB of RAM, which you should be able to take advantage off if you intend to do a lot of work on the device. What we're basically saying is that the Dell Inspiron 14 fullfills the criteria for being an Ultrabook, but doesn't offer more than that.

ASUS
S400CA

A surprising entrant in this test, the S400CA is powered by a third generation i7 CPU and while on paper it's quite powerful, the performance figures overleaf will conclusively prove the archaic nature of anything that's not powered by Haswell.

Other than featuring the fastest CPU in the test, there's nothing much else that really stands out. While it is, by the strictest definition of the word, an Ultrabook, it's definitely not an Ultrabook of this era.

A year ago, this would have been a strong contender, but in 2014, it's not even worth considering when there are so many better options available at a lower price point.

Another thing we must point out is that this was the most difficult laptop to format, owing to restrictions in the BIOS.

ACER
Aspire S7 392

A truly gorgeous laptop this. The device is very slim and is thus incapable of hosting a slew of connectivity options. You get two USB 3.0 ports, HDMI, a card reader and the so called "Acer Companion Port", and that's about it. The screen is only 13.3", but it's a 1080p display with impressive stats, as our performance figures will show.

While we did complain about a lack of features in the previous two devices, that complaint was for the lack of features on devices that have no excuse for scrimping out on them, the Acer on the other hand, being this slim and light, has every excuse for doing just that. The companion port makes up for any shortcomings however. In the event you desperately need something like LAN, you needn't sacrifice a USB port for a hub.

TOSHIBA
Portégé Z30t-A

Possibly our favourite Ultrabook, the Portégé is a very business-minded Ultrabook that ticks all the right checkboxes in just about every department.

The connectivity options are about the same as on any other Ultrabook, but what stands out is the matte-finish screen and the TrackPoint, something we're normally used to seeing on Lenovo Thinkpads.

Speaking of the screen, one issue we had with this device was the somewhat less impressive touch response. The touchpad could also have been improved a bit. It's functional, but the buttons are a pain to use, especially if you want to right click.

Overall, this is an impressive device, not least for it's almost negligible weight of 1.18Kgs. This a device we would like to carry everywhere.

Specifications	Specifications	Specifications	Specifications
Display. .... 14in LCD @ 1366x768	**Display**. .... 14in LCD @ 1366x768	**Display**. .... 13.3in LCD @ 1080p	**Display**. .... 13.3in LCD @ 1080p
CPU. .... Intel Core i5 4200U	**CPU**. .... Intel Core i7 3517U	**CPU**. .... Intel Core i5 4200U	**CPU**. .... Intel Core i5 4200U
RAM. 6GB	**RAM**. 4GB	**RAM**. 4GB	**RAM**. 4GB
Storage. .... 500GB HDD	**Storage**. .... 500GB HDD	**Storage**. .... 256GB SSD	**Storage**. .... 256GB SSD
GPU. .... Intel HD 4400	**GPU**. .... Intel HD 4000	**GPU**. .... Intel HD 4400	**GPU**. .... Intel HD 4400
OS. .... Windows 8	**OS**. .... Windows 8	**OS**. .... Windows 8	**OS**. .... Windows 8
Weight. .... 1.99 Kg	**Weight**. .... 1.8 Kg	**Weight**. .... 1.3 Kg	**Weight**. .... 1.18 Kg
USB. 2xUSB 3.0	**USB**. 2xUSB 2.0, 1xUSB 3.0	**USB**. 2xUSB 3.0	**USB**. 3xUSB 3.0
Misc. .... NA	**Misc**. .... NA	**Misc**. .... Acer Companion Port, Laptop sleeve	**Misc**. .... TrackPoint

Corrigendum

We apologize to our readers for wrongly publishing some details of the Acer Iconia W4 in the Windows tablet comparison test last month. It's specs were wrongly mentioned in the tablet of having 32GB storage (it comes with 64GB), and CPU speed of 1.3GHz (it's top burst speed is 1.8GHz, which wasn't mentioned). And while the tablet was 3G enabled, we wrongly suggested it of not having a SIM card slot. We will be more careful about verifying the information we publish in future.

ACER
TravelMate P645

Powered by Intel's i5 4200U CPU and 8GB of RAM, the P645 should have more than adequate grunt for day-to-day use. You do get three USB 3.0 ports and the rest of the expected connectivity options, but there are two things that stand out with this laptop. The first is the touchpad, which is the best we've encountered in the test, and the second is the lack of a touch screen; an almost shocking omission in this category.

The P645 is an otherwise impressive device, but what will make or break the buying decision for you is your affinity to a touch-screen on a Windows-based laptop. We definitely feel that a touch-screen on a laptop, while not a pre-requisite, is a nice option to have.

It's a decent laptop, feature-wise, and buy it for the keyboard.

Specifications

Display.........14in LCD @ 1366x768
CPU................... Intel Core i5 4200U
RAM... 8GB
Storage...........................500GB HDD
GPU.............................. Intel HD 4400
OS..Windows 8
Weight...1.5 Kg
USB.......................................3xUSB 3.0
Misc........................No touch-screen, accelerometer

LENOVO
Yoga 2 13

The Lenovo Yoga 2 is one of the few devices to offer a platform that elegantly embraces Windows 8's touch-friendly (or unfriendly, depending on your perspective) UI. As all of you must be aware by now, the Yoga's 360 degree hinge allows the device to seamlessly transition between traditional and pseudo-tablet modes.

The device isn't all about the hinge. It's very well-designed and even without the hinge, is a very capable and feature-rich device that'll give any Ultrabook a run for its money with its support for motion control (a bit gimmicky) and hardware volume and factory reset keys.

You only get one USB 3.0 port, which is a little disappointing, but it's really doubtful if you'll need more than one at a time anyway.

Specifications

Display............ 13.3in LCD @ 1080p
CPU................... Intel Core i5 4200U
RAM... 4GB
Storage..................... 500GBGB HDD
GPU.............................. Intel HD 4400
OS..................................... Windows 8.1
Weight...1.6 Kg
USB.......................................1xUSB 3.0
Misc....................................360 hinge, motion control

LENOVO
IdeaPad Flex 2

Some call this the poor man's Yoga and we're inclined to agree. You lose out on the Yoga's 360 degree hinge in favour of a 300 degree (approximately) one. In the bargain, you pay ₹10,000 less, get a slightly larger screen and quite a bit more bulk.

The Flex 2 is definitely not a bad device, especially when you also consider the fact that it comes with a dedicated Nvidia GPU (but it's not a very powerful one). The Flex however, is overshadowed by the Yoga, which, for a slightly higher asking price, offers much more. Why would you buy a Mazda when you can get a Ferrari?

Using the same argument however, the Mazda might be less flamboyant, but also the more practical of the two (and cheaper). Ultimately we feel it's a personal preference here.

Specifications

Display................14in LCD @ 1080p
CPU.....................Intel Core i5 4210U
RAM... 4GB
Storage...........................500GB HDD
GPU...NVIDIA GeForce 820M
OS..................................... Windows 8.1
Weight.......................................1.89 Kg
USB.......................................1xUSB 3.0
Misc... Hinge

FEATURES

When you're in the market for an Ultrabook, there are certain features that you need to look out for, features that may not be essential, but will definitely make for a more pleasurable computing experience.

CPU: We can't stress this enough, if you're getting yourself an Ultrabook, get one that's powered by Intel's Haswell CPUs. The improvements in efficiency ensure the perfect balance of processing power and power consumption, a combination that ensures that your device is adequately powered and will offer excellent battery life. This is unmatched by any of other CPU family in the market today, even Intel's previous offerings.

Display: Try to aim for a 1080p display. While 1366x768 is sufficient at sub-14" screen sizes, it's definitely not as lovely as 1080p. At this resolution you'll be hard pressed to spot pixels on the screen and in the long-term, your eyes will definitely learn to appreciate the difference. Don't worry about scaling, Windows 8.1 has learnt from its past mistakes (some mistakes) and the DPI can be effectively scaled to compensate.

Also, while it's not required, aim for a device with a touch-screen. Windows 8 devices still don't support truly effective touchpad navigation and a touch-screen will be a noticeable advantage.

You might want to look out for external battery pack support too.

PERFORMANCE AND DESIGN

DELL
Inspiron 14 7437

The Dell manages to redeem itself in the design department somewhat. The overall shape of the device is very similar to the MacBooks that have inspired so many laptops in their time, but the design is sufficiently different to stand out. The black Dell logo on the lid looks particularly nice.

In terms of pure numbers, the performance is average, with battery life standing out as the best in class.

The keyboard and touchpad are basic and functional and do their job. The backlight performance is not very consistent though. We found that a bright screen in a dark room tended to obscure the backlit keys.

The contrast ratio of the screen was terrible and white levels atrocious, which made the movie watching experience quite dull. The speakers are quite good however; loud, if a bit harsh.

ASUS
S400CA

Our performance scores very accurately reflected the strengths and weaknesses of the Ivy Bridge platform here.

The S400CA managed a very decent showing in 3DMark's Ice Storm benchmark, a CPU intensive one we might add, and almost every other CPU benchmark available.

At the same time, the GPU scores and PCMark 8 scores were the lowest we recorded. The battery life was also terrible at only 132 minutes, but this isn't the worst news. The maximum recorded temperatures shocked us, we saw 92°C on full load. This is definitely not one for your lap, if you value your skin that is.

The screen was also terrible, with a measured contrast ratio of 80:1 and if anything, the white saturation was even worse, with 9 out of 12 boxes visible (lagom. nl). A better screen and a Haswell CPU are desperately required.

ACER
Aspire S7 392

If ever there was an Ultrabook for show, this has to be it. The S7 is slim and sleek like no other Ultrabook we've seen. The design and build quality exudes quality and we particularly liked the Gorilla Glass lid with its glowing Acer logo.

The keyboard and touchpad are a bit of an issue and are neither as comfortable nor as responsive as we would like, but if you're buying this device you're not doing it for the functionality, we hope.

The screen is lovely, the colours are vibrant, a tad oversaturated and very punchy and the touch-screen a joy to use. Performance figures are average, but that's to be expected.

Speaking of temperatures, the device did touch 79 degrees, but the exhaust is efficiently expended out the back, ensuring that the device itself doesn't get too hot, keeping your laps safe.

TOSHIBA
Portégé Z30t-A

This is quite possibly the best laptop in this comparison. It's the very definition of a laptop, it's light, ergonomic, well-designed, boasts of the best screen in this test, has the best laptop keyboard we've tested and features a matte screen.

There were a few issues we faced with regard to the touchpad's keys, which were stiff, the less than stellar touch-screen response and the low output of the speakers.

These aspects could definitely have used some work, but they're not deal-breakers by any stretch of the imagination.

More than even the keyboard however, it's the screen that stands out. Movie watching was a pleasure on the device and if only the speakers had been better, this would have been a great multimedia device.

Sadly, the asking price is very high for what's on offer.

Performance	
PCMark 8	2155
3DMark Ice Storm	40197
Peacekeeper	4294
Cinebench R15	233cb
Sniper Elite V2	13fps
Contrast Ratio	101:1
Max. Temp	74 °C
Battery Life	253 minutes

Performance	
PCMark 8	1838
3DMark Ice Storm	42729
Peacekeeper	3995
Cinebench R15	254cb
Sniper Elite V2	9.6fps
Contrast Ratio	80:1
Max. Temp	92 °C
Battery Life	132 minutes

Performance	
PCMark 8	2145
3DMark Ice Storm	41535
Peacekeeper	4451
Cinebench R15	230cb
Sniper Elite V2	13.1fps
Contrast Ratio	550:1
Max. Temp	79 °C
Battery Life	200 minutes

Performance	
PCMark 8	1959
3DMark Ice Storm	36194
Peacekeeper	4137
Cinebench R15	233cb
Sniper Elite V2	10.5fps
Contrast Ratio	686:1
Max. Temp	74 °C
Battery Life	223 minutes

NOTES ON PERFORMANCE:

It was interesting to note that the Intel i5 4200U was the de-facto CPU for almost all the devices in this comparison, testament to that CPU's capabilities. The drastic performance differences that we noted with the very same CPU were a bit unexpected, but we suspect that there is some sort of throttling involved to keep temperatures in check, maybe by limiting the boost clock.

Either way, this is not really a major issue as our tests are mostly indicative of performance under heavy load, which we believe, most of these devices will not be subject to. The PCMark 8 scores on the other hand, are a more realistic indicator of a system's performance and as can be seen from the results, there isn't much variation in performance between the various devices. Which is heartening as it means that as a buyer, you don't need to focus so much on the hardware anymore.

Another thing to note here is that our battery tests are synthetic benchmarks designed to drain the battery under heavy system loads and provide consistent results across devices to eliminate any bias. As a result, the test scores that you see indicate battery life under the worst possible conditions, meaning that real-world battery life will be much greater. A device that does well in our test will do exceptionally well in the real world.

ACER
TravelMate P645

The TravelMate is an Ultrabook for businessmen and it feels exactly like that. It's understated in design and did surprisingly well on the performance front, with the second-highest performance figures in this test.

Battery life was second only to the Inspiron, but only by a couple of minutes, which is a negligible difference. The keyboard and touchpad were a joy to use.

The laptop does suffer from a sub-par screen and soft speakers, which meant that movies and music weren't as much fun, also, the screen had the lowest brightness of any laptop in this test. As mentioned earlier, the omission of the touch-screen is a glaring oversight, especially considering the price.

This is a laptop we really wanted to like, but it's missing out on a few key feature to make it a killer deal.

Performance

PCMark 8	2073
3DMark Ice Storm	46776
Peacekeeper	4272
Cinebench R15	222cb
Sniper Elite V2	13.2fps
Contrast Ratio	94:1
Max. Temp	65 °C
Battery Life	251 minutes

LENOVO
Yoga 2 13

Lenovo's always been known to make great laptops and the Yoga 2 is no exception. The hinge is already a Yoga series' trademark and we do love it, but even ignoring it, the Yoga 2 is still quite a beast.

The gorgeous screen is one of the first things that hits you when you look at the Yoga. It's about 30% brighter than the rest of the competition and features a great contrast ratio.

Performance figures are a little below average, especially the battery life. Strangely enough, while the maximum temperature hit was only 60°C, the laptop tends to get uncomfortably warm on your lap, which is about the only complaint we have against this device.

The machine is an excellent option for movie watching too, provided you get an extra set of speakers, courtesy the gorgeous, and very bright screen.

Performance

PCMark 8	2027
3DMark Ice Storm	33897
Peacekeeper	2718
Cinebench R15	230cb
Sniper Elite V2	12.9fps
Contrast Ratio	611:1
Max. Temp	60 °C
Battery Life	167 minutes

LENOVO
IdeaPad Flex 2

The Flex 2 is, by itself, quite a decent device and the cheapest in this test, but also the most powerful, owing to the dedicated NVIDIA 820M GPU.

Our performance scores bear that out, with the device performing at least 25% better than most of the other devices here in 3DMark.

The battery life was surprisingly low, but that can be attributed, in part, to the Nvidia GPU that is brought to bear in certain segments of our battery life benchmark. Without GPU intensive tasks, you should see a slight improvement.

Sadly, the screen on the Flex 2 is sub-par, ruining an otherwise great device. We were impressed by the speakers, they're loud and severely lacking in bass, but at least don't distort noticeably at higher volumes. The keyboard is also among the better ones, better than on the Yoga 2 even.

Performance

PCMark 8	2081
3DMark Ice Storm	49029
Peacekeeper	4101
Cinebench R15	230cb
Sniper Elite V2	20fps
Contrast Ratio	71:1
Max. Temp	64 °C
Battery Life	125 minutes

FINAL THOUGHTS

DELL
Inspiron 14 7437
Price: ₹71,990

The Inspiron isn't an inspired device. It's a very staid device and stolid performer that doesn't do anything to stand out from the crowd. The one stand-out feature on this device is the battery life, but it's so large and heavy that it would be surprising if it didn't offer great battery life.

The device is so dull in fact that we're not sure what to write about it. It just exists.

To be fair however, the device isn't particularly good at anything, but it's not particularly bad either. If we're feeling a bit charitable we will say that the Dell is a safe option. There's no real risk involved and if you avail of Dell's excellent customer service (with the extended warranty), this device can serve you well for quite a while.

We do wish there was a bit more pizzazz to the device.

Overall Rating 49

Performance	35
Features	36
Design	69

Contact:
Dell India
Phone No.: 1800 425 4026
Support: NA
Website: http://www.dell.co.in/

ASUS
S400CA
Price: ₹59,999

This laptop brings to mind that line from Die Hard 4, "an analogue cop in a digital world". It's a device that has just failed to keep up with the times and only because it doesn't have an updated CPU.

The device, apart from the CPU, is a perfectly average device that boasts of a mediocre screen and very loud speakers. Sadly, the CPU is so much of a let-down that we cannot, in good conscience, recommend this device to anyone.

The tale of this laptop starts and ends with the CPU; everything depends on it, the battery life, performance, operating temperatures, they're all terrible and a simple CPU upgrade will fix that. The lesson here? If you're serious about a laptop, ignore everything that's older than the Haswell generation of CPUs.

Overall Rating 45

Performance	29
Features	48
Design	60

Contact:
ASUS Technology Pvt. Ltd.
Phone No.: 1800 209 0365
Support: reachus@asus.com
Website: www.asus.in

ACER
Aspire S7 392
Price: ₹1,02,999

We can unabashedly say that when we saw this laptop, we drooled over it (not literally, we have a better sense of decency than that).

It looks like a delicate slab of pristine porcelain and is as thick as the screens of lesser laptops. This is a device that will engender covetous thoughts in your fellow man and will spoil you for just about every other Ultrabook on the planet (excepting maybe the Macbook Air).

The laptop looks so nice that we didn't want to find any flaws in it, but flaws there were. The keyboard is in need of reworking and so does the touchpad. As mentioned earlier, they're functional, but not worthy of a device such as this.

If you want a device just for the pure joy of showing it off, this is it.

Overall Rating 53

Performance	41
Features	44
Design	71

Contact:
Acer India Pvt. Ltd.
Phone No.: 1800 11 6677
Support: ail.nbeasycare@acer.com
Website: www.acer.co.in

TOSHIBA
Portégé Z30t-A
Price: ₹1,00,000

Toshiba's been missing from our laptop test sheets for a long time now and we're quite sorry we couldn't test many of their other offerings because if they're anything like the Portégé Z30T-A, we're in for a treat.

We've already spoken of this Ultrabook's flaws, but its strengths will more than make up for them. What's most impressive about this device are the screen, the build quality and the keyboard.

We're quite used to mechanical keyboards in our office and this side of a mechanical keyboard, the Portégé's keyboard might just be the best keyboard we've used in a long time.

Keyboard aside, this device is a solid performer and is much recommended for anyone, but the price is too high for what's being offered.

Overall Rating 56

Performance	43
Features	48
Design	74

Contact:
Toshiba India
Phone No.: 1800 200 8674
Support: http://dgit.in/1qIPvjw
Website: www.toshiba-india.com

ACER
TravelMate P645
Price: ₹67,412

The P645 is a surprisingly likeable laptop. It's well-designed and well-built and features an excellent keyboard with the most tactile touchpad in the test. Temperatures are very much in control, rarely exceeding 60, but this is a very efficient and unassuming Ultrabook, not one you'd be in the habit of flaunting.

The device is let down by the lack of a touch-screen, and this might not seem like much to someone who's not experienced it, but we caught ourselves constantly tapping on the screen, expecting a response.

Which in itself is a clear indicator as to what one should expect in a laptop. If it weren't for the presence of the Portégé and the lack of a touch-screen, and a better display for that matter, this device would have well and truly stolen our hearts.

Overall Rating 50

Performance	35
Features	39
Design	71

Contact:
Acer India Pvt. Ltd.
Phone No.: 1800 11 6677
Support: ail.nbeasycare@acer.com
Website: www.acer.co.in

LENOVO
Yoga 2 13
Price: ₹59,990

As a device, the Yoga is diametrically opposite to the Dell Inspiron 14. It's cheaper, lighter and smaller, sets itself apart and makes a statement. We've said it before and we're saying it again, the fancy hinge is only a small part of the Yoga 2's appeal.

When you buy the Yoga 2, what you get is an exciting and ergonomic design that is stylish and functional at the same time.

The bottom plate does get hot enough to be uncomfortable at times and the battery life is quite low, but that's a small price to pay for what is, overall, according to our tests and in our opinion, the best Ultrabook in this comparison test.

This is the device we'd carry with us every day if we could, even if it's not the most practical and sensible option.

Overall Rating 57

Performance	41
Features	49
Design	77

Contact:
Lenovo India
Phone No.: 1800 3000 9990
Support: http://dgit.in/Tiwzd0
Website: www.lenovo.com

LENOVO
IdeaPad Flex 2
Price: ₹49,990

This laptop will always remain in the shadow of the Yoga, a good device that will forever fail to reach its potential and follow in the wake of its elder sibling. We've described it earlier as the poor man's Yoga 2 and we really can't think of anything more apt, but it also means that it's more underrated than you'd imagine.

Assuming you're not enamoured by the Yoga 2's fancy hinge, then the Flex 2 is a worthy option to consider, seeing as it's almost a Yoga in terms of design, and quite a bit more powerful and cheaper at the same time.

If Lenovo would be kind enough to slap on the Yoga's stellar screen, we'd be hard-pressed to pick between the two.

Regardless, the Flex 2 still offers quite a bit of bang for your buck. It's the underdog that deserves more attention.

Overall Rating 51

Performance	30
Features	55
Design	71

Contact:
Lenovo India
Phone No.: 1800 3000 9990
Support: http://dgit.in/Tiwzd0
Website: www.lenovo.com

THE IDEAL ULTRABOOK

Now that we've tested so many Ultrabooks, it's safe to say that we have a fairly good idea as to what will make the ideal Ultrabook. In our opinion, the ideal Ultrabook will have the sleek and sexy body and gorgeous screen of the Acer Aspire S7, the keyboard of the Toshiba Portégé Z30T-A, the touchpad from the Acer Travelmate P645, the speakers from the Flex 2 and the ergonomics and hinge from the Yoga 2. Coupled with a suitably capable CPU and battery. We would have quite a device on our hands (2014 Razer Blade, where art thou?)

Despite the gorgeous and very capable devices that we tested, we still felt a little bit disappointed by the Ulltrabooks on offer. Not that there was anything particularly wrong with them mind you, but because Windows 8 itself somehow doesn't feel right on any of the platforms we saw. It's as if it can't decide which interface it's most comfortable with (keyboard, touchpad or touch-screen) and is an awkward mixture of the three. Lenovo took an extra step forward with its hinges and even added support for motion control, surprisingly useful in "tent" mode.

Mild Microsoft bashing aside, we were impressed by the fact that as far as build quality and ergonomics go, almost all the devices raised the bar considerably, assuring a better baseline experience for all users.

HOW WE TESTED

Initial setup: All Ultrabooks to be tested are first examined and any and everything about them is catalogued, including bundled software, accessories, etc. We then completely wipe all data on the Ultrabooks and install a copy of the Windows 8.1 Enterprise Edition. Drivers and essential software are installed from the manufacturers' website before running Windows update. Finally, the devices are set to run in performance mode in the BIOS as well as in the power options.

Performance tests: We conduct a whole series of tests on the devices to measure the impact of every aspect of the system on overall performance. These tests include Cinebench, POVRay, PCMark8, 3DMark, and many more. We use PCMark8's Creative test suite to evaluate battery life. Results are carefully catalogued.

Screen contrast ratio is measured using the Spyder3 Elite test unit and lagom.nl.

The final performance score is the weighted sum of all the scores catalogued. Weights are assigned based on the perceived importance of the components.

Features score: The features present in each Ultrabook are tabulated and given weighted scores depending on perceived importance. For example, dedicated multimedia keys and volume keys are given more weightage than those that are shared with Fn keys.

Design and Usability: The scores for this parameter are largely subjective as they indicate our experience with the device. Items such as quality of the keyboard, responsiveness of the touch-screen, etc. are weighted and scored.

Final score: The final score that we arrive at is the sum of the performance, features and design scores with a 40%, 30% and 30% breakup respectively.

Understanding winners: The Best Buy laptop is awarded to the device with the best price to performance ratio based on a pre-determined formula. This is the ideal, value for money product in the test.

The Best Performer award is awarded to the device with the highest overall performance score.

The Editor's Pick award is awarded to the device that we feel has a lot of promise but misses out on the previous two awards narrowly. The Editor's Pick award is slightly more subjective, we confess, as compared to the other two awards.

VERDICT

The best performer award goes to the Toshiba Portégé Z3OT-A. The pure CPU benchmarks did indicate below average performance, but overall, the Portégé pulled through with it stellar screen and excellent battery life, which matters more in this segment.

The Acer Aspire S7 deserves special mention for being almost as good, only losing out because the Portégé's screen and battery life were just a tiny bit better. The S7 does in fact, deserve an award for it's form, which really is very impressive in a laptop. The very slim and sleek design mean that you rarely feel like you're holding a full-fledged laptop in your hands and not some sort of tablet or Surface type device.

The Best Buy award goes to the Lenovo Ideapad Flex 2. It's the cheapest device in the test, but also the most powerful. We would have definitely loved to see a more capable screen on the Flex, but if the Yoga's screen and hinge do not appeal, the Flex 2 is by far the better deal. It's a great all-rounder and that can hold its own with the best. The low battery life is stil a major concern, but the Flex offers a lot for the price.

Finally, the Editor's Pick award goes to the Lenovo Yoga 2 13. Why? Because we feel that overall, it provides a more robust user experience compared to all the other Ultrabooks in this test. We do love the hinge and that screen needs to be seen to be believed. Picking between the Portégé, the S7 and the Yoga was really hard, but the Portégé was too expensive and the S7 was a little less ergonomic.

This has been among the toughest comparison test we've had to conduct, but hopefully, the effort has been worth it for you, as a consumer.

LENOVO
IdeaPad Flex 2

PROS:
- Value for money
- Dedicated GPU
- Temperatures in check

CONS:
- Low contrast ratio (display)
- Sub-par white levels displayed
- Low battery life

TOSHIBA
Portégé Z3OT-A

PROS:
- Excellent keyboard
- Vibrant screen
- Light-weight

CONS:
- Touchpad
- Touch-screen response
- Speaker Volume

LENOVO
Yoga 2 13

PROS:
- 360 degree hinge
- Bright and vibrant screen
- Ergonomics

CONS:
- Low battery life
- Bottom plate heats up
- Speaker volume

Bazaar

THE LATEST PRODUCTS REVIEWED FOR YOU

The Digit Test Centre receives hundreds of products every month. Each of these products is put through a series of tests and is finally given a score. The final score is arrived at after considering a number of factors and evaluating them in terms of features, performance, value for money, build quality, and, in the case of software, even ease of use.

For better understanding of our ratings, here's a quick guide to our overall score

10 to **30** — **Extremely poor product.**
Keep away!

31 to **50** — **Strictly OK.**
Not recommended

51 to **70** — **Decent product.**
Go for it, but there may be better products out there.

71 to **90** — **Very good product.**
Highly recommended.

91 to **100** — **Ground-breaking product.**
We've never seen anything like it before.
A definite must buy!

Groovez BTHS800
Not bad at all

Over the past year or so we've had Bluetooth headphones from the likes of Logitech, iBall, Rapoo and others but so far none of the them have impressed us a lot, except for a rather expensive pair from an unlikely brand - the TDK WR 700 - that graced these hallowed halls more than three years ago. All that apart let's find out how the BTHS800s from STK fare.

First off you get a lot of accessories out of the box: a nice hardcase with a carabiner attachment, charging cable, and for those moments when you want to go old school – a tangle free flat 3.5mm cable. The headset itself feels sturdy for the most part except for the hinges where it actually folds. The clamping pressure is quite a bit but not vice like which is a good thing – the headset won't slip off if you get jostled around in your bus/train commute and yet isn't uncomfort-

able for supra-aurals which aren't ultra-comfortable to begin with. There are buttons on each ear cup for volume, play/pause and skip track. The buttons are clickety but do their job well enough.

Now comes the all-important aspect of performance and sound quality. The positives first: the headset is loud and we mean "hearing impaired" loud. It's loud enough to drown out traffic, fellow commuters and the occasional wedding procession with ease. The sound signature is where the Groovez takes a beating. The sound is hollowed out, like a permanent empty concert hall DSP has been applied. The bass isn't hard hitting or impactful and yet there's enough of it.

It's boom-boom all the way and most bass-heads will be very happy with the sound of this headphone. The highs are muted, the mids are all fuzzy so don't go searching for extreme fidelity. What you get is a decently loud, bassy wireless headset with mic, which for the price point isn't bad at all.

Siddharth Parwatay

Price ₹3,999 + Tax

60
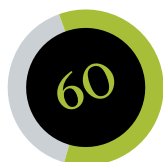
Features	68
Performance	50
Value	62
Build	58

Specifications
Bluetooth: V4.0 Class 2; **Weight:** 250g; **Battery:** Lithium Polymer; **Rated playback time:** 8 Hrs; **Dimensions:** 55 x 45 x 58 mm

Contact
STK Group Santok Enterprises Ltd
Phone: 9840308113
Email: vishal.joshi@santok.com
Website: www.stk-acc.com

HTC Desire 816 Dual-SIM
The best mid-ranged phablet from HTC

HTC has always been excellent in designing their smartphones and the Desire 816 is a neat looking phablet. It is a pretty large device sporting a 5.5-inch Super LCD2 display with very good bright and contrast level. Viewing angles are perfectly good and colours don't fade all that much. The phablet isn't too bulky and weighs at about 165gms and is pretty slim at just 8mm.

It runs on the latest Android 4.4.2 Kit Kat update along with the latest Sense 6 UI which we have already seen on the HTC One (M8). The UI is very smooth on

the phablet and all apps run seamlessly. The phablet being a dual-SIM, offers dual-standby so you don't miss calls or messages from any of your numbers.

The Snapdragon 400 processor along with the Adreno 305 GPU gives enough power to handle graphics intensive tasks like playing high-end games with ease.

The primary camera on the Desire 816 is equipped with a BSI sensor backed up with an LED flash and there is also a front 5MP camera. The camera UI is straight and simple and you get to tweak around with a bunch of focusing modes, filters, white balance, ISO, exposure compensations and so on. Overall we were impressed by the camera.

For the ones looking for a large screened device in a comparatively affordable price segment, the Desire 816 Dual-SIM is an excellent choice.

Kunal Khullar

Price ₹24,800

78
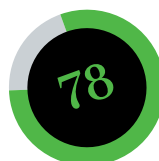
Features	81
Performance	77
Value	81
Design	74

Specifications
Display: 5.5 inches Super LCD2 panel with 1280x720 resolution (267ppi); **Battery:** 2600mAh; **Storage:** 8GB; **Camera:** 13MP rear with LED flash, 5MP front; **SoC:** Qualcomm Snapdragon 400; **CPU:** 1.6GHz quad-core; **GPU:** Adreno 305; **RAM:** 1.5GB; **Operating system:** Android 4.4.2 with Sense 6 UI; **Connectivity:** 3G, W-Fi, Bluetooth , Dual-SIM

Contact
HTC India
Phone: 1800 266 3566
Website: www.htc.com

Many servers still vulnerable
After the Heartbleed vulnerability was made public about two months ago, many servers haven't been patched yet **http://dgit.in/1nuCq8m**

Kevlar inventor passes away
Saving countless lives, Stephanie Kwolek who invented Kevlar dies at 90
http://dgit.in/1lJDx5H

Bazaar

BlackBerry Z3
BlackBerry impresses in the mid-range

The BlackBerry Z3 makes its way towards the market at a time when phone manufacturers, after focusing on the top-end for much too long, have realised the importance of the budget/mid-range segment. We got a 'pre-launch' test unit of the Z3 which, we were assured, was very similar to the launch model.

Design & Build

Even if you're not a fan of BlackBerry phones, you would be hard-pressed to deny that the Z3 is one of the best built and premium looking phones at its price. The Z3 isn't the slimmest phone but despite its thickness and overall size, the phone feels relatively light, its 164 grams not really making it bulky or difficult to handle. The Z3 is large and its build quality is firm and sturdy despite relying exclusively on plastic. The Z3 has a textured non-removable back panel that helps you keep a grip on the phone. The device looks good and chances are that people's guesses about its price will be a lot higher than the actual price-tag.

The Z3's 5-inch screen is colourful, accurate but it is shackled by a resolution of 960x540 pixels. This is understandable because of the phone's price but at times five inches does seem like too much real estate for that resolution to cover. Nothing to complain about the screen apart from the fact that it does tend to lose visibility under direct sunlight.

Features

BB10 has been around for a while and if you've already made up your mind about it, then this won't really change your mind. BB10, on the Z3, remains a mobile OS that focuses primarily on communication, be it through emails, messages, on Facebook or Twitter or phone calls. As a result, the phone lets you access all of the aforementioned quickly from anywhere in the phone, even if you're inside an app through the 'Hub' that can be accessed by swiping to the right on the homescreen and upwards and to the right inside any app.

You'll have to rely on either the BlackBerry World app store or a third party Android app store for your apps. In the case of the former, you will get plenty of apps but you may come across some big missing names. In the case of the latter, you will be able to install almost any Android app but you can't be 100% sure if the app works. For instance, we installed Dead Trigger 2 (from the 1Mobile Market app store) but the game wouldn't run.

Performance and Usability

The Z3's performance is smooth and lag-free throughout including when switching to and between apps or browsing the Web. One issue that crops up is that because of its large size, swipe gestures that require you to swipe from the edge of the screen become difficult unless you have particularly large hands. In that way, the Z3 requires two-handed operation more times than not.

The Z3's 5MP camera continues BlackBerry's tradition of packing in unimpressive shooters in their phones. On the plus side, the camera launches quickly and takes little time to shoot multiple photos. There are also built-in filters and editing options to 'improve' captured photos which works pretty well.

The Z3 impresses with its battery life and we saw the phone last for nearly a day and a half of use which consisted of phone calls, time on Facebook, about 20 mins of gaming and camera use. Another thing that impressed us was the Z3's keyboard which remains one of the best touchscreen keyboards in the business.

The Z3's speaker was surprisingly soft during calls but reproduced music well. The Z3 is a good phone for music especially since it makes buying music from the BlackBerry World store so easy.

Bottomline

The BlackBerry Z3 makes a strong case for the Canadian phone maker in the mid-range segment. It's worth recommending at ₹16k for its large screen, although a lower price would have made it a much better deal. At about ₹16.5k, the Blackberry Z10 is a significantly better buy if you're okay with its 4.2-in screen. You can also consider the Motorola Moto G and the Nokia Lumia 720.

Nikhil Pradhan

Price ₹15,990 (approx.)

73
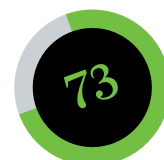
Features 65
Performance................ 75
Build Quality 75
Value for money.......... 75

Specifications

Operating System: BlackBerry 10.2.1; **Screen Size:** 5-in at 960x540 pixels; **Built-In Storage:** 8GB; **MicroSD Card Support:** Upto 32GB; **RAM:** 1.5GB; **Camera:** 5MP; **Wi-Fi:** Wi-Fi 802.11 b/g/n; **Bluetooth:** v4.0 with A2DP; **Battery:** 2500mAh; **Processor:** 1.2GHz dual-core Snapdragon 400

Contact

BlackBerry India
Phone: NA
Support : https://consumersupport.webapps.blackberry.com/support/form/contact_in/
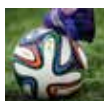
The Goal Line Technology
Check out how technology is making the football
World Cup in Brazil this year far more precise
http://dgit.in/1qCyho0

Light warms only you
Researchers at MIT have built a new a
system which could locally wamr you using
infra red rays **http://dgit.in/1p6HDbZ**

Skullcandy Crusher
Difficult to take them seriously

There are headphones that are bass heavy – like the Sony MDR "extra bass" XB920 – and then there are headphones like the Crusher that take the concept of head shaking bass to newer, almost ridiculous levels. Like the original Skullcrushers from a few years ago, the Crusher too employs a powered force feedback mechanism to give the illusion of amplified bass. This mechanism which Skullcandy has dubbed the Sensation 55 driver, actually vibrates the ear cups in sync with the bass notes in the music you are listening to. This is very much like the tactile force feedback mechanism you find in console controllers and adds more reverb.

The whole thing is more like a gimmick rather than an enhanced listening experience. It's something you'd

Price ₹7,999

want to show to your friends and watch as their experience changes when the bass kicks in and soak in the gasps and *whoas*.

Now that we've got the most talked about part out of the way let's try to focus on the other performance parameters. For the most part without the battery-powered bass enhancement turned on, the bass is still slightly on the higher side. The highs are clear enough but not pristine and the overall sound signature is bright. Some of the other frequencies seem suppressed. These are not anywhere close to being audiophile headphones so don't even go down that track.

The foldable design makes it easy to carry the headphones and the build quality seems much better than its predecessor. If you're bowled over by the novelty of headphones that have the bass potential to turn your brain into mush, then sure. If not, there are much better headphones for this price.

Siddharth Parwatay

54
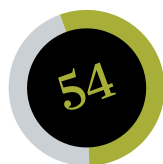
Features	65
Performance	50
Value	35
Build	65

Specifications
Driver size: 40mm; **Impedance:** 42 Ohms; **SPL:** 102 dB; **THD:** <0.1 %; **Weight:** 228g

Contact
Brandeyes Distributors Pvt. Ltd.
Phone: 1800 102 3858
Email: customercare@brandeyesonline.com
Website: http://intersection.in/

Gionee Elife S5.5
The slimmest smartphone in the world

The Gionee Elife S5.5 is truly the slimmest smartphone boiling down to a jaw-dropping thickness of just 5.5mm.

There is a metal frame in between which acts as a chassis for the smartphone and the front and back have a glass finish. The metal frame has sharp edges and the glass finish is rather disappointing as it makes the device slippery and prone to fingerprints and smudges. Overall the build quality feels very solid and stable and gives a premium feel. The front has the 5-inch Super AMOLED display, which is one of the best features of the smartphone.

The smartphone runs on Android 4.2.2 with Gionee's very own Amigo UI 2.0. The

Price ₹21,500

UI is fairly smooth but there are instances where you see minor lags here and there. We also noticed that the handset heats up on certain occasions, especially when playing videos and gaming. The battery seemed to be an issue as our test showed that the smartphone is a power hogger. After running a full HD video for one hour, there was a loss of 30%. This means you can only churn out slightly more than 4 hours of full HD playback.

The camera on the S5.5 can shoot images of upto 13MP resolution and full HD videos at 30fps. The primary camera has a fast focusing system and offers zero shutter lag which in real world works quite well. Overall the S5.5 has a worthy camera.

If you don't worry about the badge on your smartphone, then this is definitely a good buy. Else the best option here is the Moto X or the Samsung Galaxy Grand 2.

Kunal Khullar

76
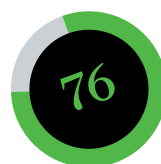
Features	81
Performance	66
Value	84
Design	73

Specifications
Display: 5-inch Super AMOLED with 1920x1080 resolution; **Battery:** 2300mAh; **Storage:** 16 GB; **Camera:** 13MP rear autofocus with LED flash, 5MP front facing; **SoC:** MediaTek MT6592; **CPU:** Octa-core 1.7 GHz; **GPU:** Mali-450MP4; **RAM:** 2GB; **Operating system:** Android 4.2 with Amigo OS 2.0 UI; **Connectivity:** 3G, Wi-Fi, Bluetooth

Contact
Syntech Technology Pvt Ltd
Phone: 1800 208 1166
Email: gcare@gionee.co.inx
Website: www.gionee.co.in

Beautiful Stockholm Subway
Check out this video of Stockholm's subways captured by Alexander Dragunov like never before
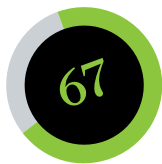**http://dgit.in/1nvS4Ag**

Game addiction bill, really?
Gaming has always been linked with the reason for acts of violence so, South Korea is passing a bill to prevent it **http://dgit.in/1nvT3k0**

Bazaar

SoundMAGIC E10M
Worth considering if you're willing to "handle with care"

67

Performance................ 78
Features 70
Value 65
Build 55

Specifications
Driver size: 10mm; **Frequency range:** 15Hz-22Khz; **Sensitivity:** 100+/-2db at 1khz/mW; **Microphone frequency range:** 20Hz-16KHz; **Cable length:** 1.2m; **Weight:** 12g

Contact
Acro Engineering Company
Email: nitya@acrotechindia.com
Website: www.acrotechindia.com

Price ₹3,500

Let me come out and say it at the beginning itself: the E10M has one of the most enjoyable sound signatures I've experienced in recent times. It's not the most accurate or precise but it is, like I said, fun. The signature is decidedly bright and as far as preferences go I'd much prefer a bright signature rather than have headphones that try to enhance the warm mids; and poorly at that.

Having said that, one of the biggest flaws with the E10M should also be highlighted in the same breath – they're quite flimsy. The cable is ultra-thin and while the housing is not badly constructed, it doesn't inspire too much confidence. The hardcase provided with the bundle is indeed a godsend then and should not be used sparingly. The mic works well and its presence on this "M" version earns it more points in the features department. Coming back to other aspects of the audio performance the stereo separation is quite good on the E10M. Perhaps the one and only flaw is that vocals don't remain true to source in some cases. For some of our test tracks, while the instrumentation was rendered well, the vocals weren't. This was most apparent on Chris Rea's *Call On Me* – the husky overtones were subdued and on Santana's rendition of *While My Guitar Gently Weeps*, India Arie's vocals were slightly flat. But overall these take away little from the overall experience offered by this nice pair. At the price point, the E10M is certainly worth considering.

Siddharth Parwatay

Toshiba Satellite P50t-B
Impresses with an eye-popping 4K UHD display – first of its kind on a laptop

This Toshiba laptop's pièce de résistance is obviously its 4K UHD display, which Toshiba proudly claims to be the "first in the world" for a laptop screen. The IPS display is very good and the 4K resolution is definitely great to work with. The screen of the Satellite P50t-B laptop is evenly lit, sharp and great to look at – everything looks good whether you're watching stills or moving visuals. Viewing angles are impressive, too, if you can look past its glossiness which ends up reflecting everything in a lit room. However, you learn to look past these distractions, and what you're left to gaze at is definitely better than what you see on most laptop screens out there.

While 4K content is in short supply, watching 4K YouTube vids and other promo vids was a magnificent experience on this laptop's UHD display. However, despite having a pretty good GPU, gaming on 4K is disappointingly slow. This is where the laptop's higher-than-high-res display seems ahead of its time. It's a good thing, and will force others to ramp up their offerings soon, which is good for consumers. Everything else on the Satellite P50t-B exudes the air of a premium laptop, right from its brushed metal screen lid, backlit keyboard which is a joy to use, and a responsive, well-built touchpad. Even its onboard audio, courtesy of Harman Kardon speakers, is better than most others. Worth every penny, if you desire this.

Jayesh Shinde

Price ₹86,000

84
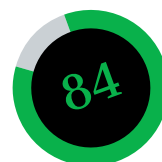
Performance................ 88
Features 85
Value 80
Build 80

Specifications
Display: 15.6-inch, IPS, touchscreen, 3840x2160 res; **CPU:** Intel Core i7-4710HQ @ 2.5 GHz; **RAM:** 16GB; **HDD:** 1TB; **GPU:** AMD Radeon R9 M265X; **HDD:** 1TB

Contact
Toshiba India
Phone: 1800 200 8674
Email: laptopcare@toshiba-india.com
Website: dgit.in/TijXCD

Fidue A63
Surprisingly detailed

This month we got a whole pile of in-ears from one particular distributor, HiFiNage. Most of these were from the Korean brand T-Peos (the reviews for which you'll see in the upcoming issue), except for one unit which was the Fidue A63. Fidue as it turns out is a Chinese brand that seems to make exclusively in-ears. The audio quality was surprisingly good on the A63. The highs are clear and more pronounced than the rest of the audio spectrum, making them sound quite detailed; almost shrill. You'll notice the sound is very similar to the Klipsch Image S4i, if you've ever got a chance to try those out. There's great detail and dynamic range but the sound lacks body. In contrast the Soundmagic E1OM has a more wholesome sound. Hooking it up to the

Price ₹4,550

Asus Xonar Essence STX did help open up the midrange a bit and as far as isolation goes, it's at par with most in-ears like the Cowon EM1.

What about features? Well there's no in-line microphone which might be a problem for some people. The cable isn't the tangle free variety that is becoming quite popular lately. But the one found on the Fidue A63 has Polyurethane sheathing, which feels sturdy and we noticed reduced cord harmonics i.e noise carrying up the cable – a good thing. There seems to be a slight problem with the ergonomics though. While the tips are comfortable and the driver housing is lightweight the housing strangely has sharp edges which do prick you when the headphones move around a little – not at all desirable. If you are someone who likes to experiment with different sound signatures and has a growing collection of in-ears, these might just make a good addition. I wouldn't recommend you look at some other options if you are planning to use them as your primary headphones though.

Siddharth Parwatay

62

Performance............................70
Features....................................62
Value 58
Build 56

Specifications
Driver size: 8 mm; **Frequency range:** 18 - 21,000 Hz; **Impedance:**16 Ohm; **Max input power:** 20 mW; **Sensitivity:** 101 dB; **Cable length:** 1.2 m; **Accessories included:**

Contact
HiFiNage
Phone: 751-2424687
Email: support@hifinage.com
Website: www.hifinage.com
Warranty: 1 year

Audio-Technica ATH-CKX9
A great pair for daily use, if you want to move up from the budget segment

The CKX9 seems built for rough use. The flat tangle free cable, the chunky driver housing, the quality C tips all exude great build quality. And they come with a hardcase that's equally matched. They are large when compared to regular in-ears but despite that are quite comfortable. The varying sizes of C tips (those flexible flanges that nestle within the ear for greater fit) and ear tips really help in getting a good seal.

In terms of performance the ATH-CKX9 falls somewhere in between the two in-ears featured in this time's bazaar. Bass frequencies are enhanced but thankfully are quite accurate. The mid-range

Price ₹4,699

is rendered reasonably well, so is instrument density. The only place they falter a little is the extreme highs – i.e they're not as bright as the SoundMAGICs, which isn't necessarily a failing, just different tuning. Some of our more casual tracks such as *Stereo Love* by Edward Maya (ones that don't demand too much precision) sounded quite good with the enhanced bass. So did live performances; one of our favourite tracks like *The Start Of Something Beautiful* by Porcupine Tree, sounded brilliantly immersive. Purists who look for a neutral (flat response) sound signature will be a tad disappointed with the enhanced bass – it can be distracting. The ATH-CKX9 makes up for its few flaws by its great comfort, isolation and build quality. If you have a bigger budget than most people are willing to invest in in-ear headphones, go for it. Especially if you plan on using in-ears day in and day out.

Siddharth Parwatay

71

Performance............................74
Features....................................68
Value 65
Build 75

Specifications
Driver size: 13.5 mm; **Maximum Input Power:** 20 mW; **Frequency Response:** 5 - 25,000 Hz; **Sensitivity:** 104 dB; **Impedance:** 32 ohms; **Weight:** 10g; **Cable length:** 1.2 m; **Accessories Included:** C tips (S,M,L), Earpieces (XS,S,M,L), Hardcase
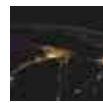
Contact
Origin Marketing Pvt Ltd
Phone: 022-28835886
Email: deepak@origingames.net
Website: www.origingames.net/
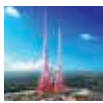
World's tallest tower in China
China has revealed plans of building the world's tallest pair of towers which will be bright fuchsia in colour
http://dgit.in/1rnpiV5

Vine from the ISS
Astronauts aboard the ISS, having been posting amazing photos and this recent vine escalates it completely **http://dgit.in/1sxmaui**

Bazaar

ASUS Sabertooth Z97 Mark 1

It's dressed like a knight amongst peasants

The Sabertooth series has long been known to stand different from the rest. The shielding across the board continues to be unique to the Sabertooth series. If you are seeing such a board for the first time, then a little information about the board's main feature is necessary. The Sabertooth boards are built to be rugged and durable. There is a plastic shield covering the front of the board which has slots for the peripherals and add-on card slots. Then you have two vents for small fans to be attached for cooling. Since the Z87 motherboard, the Sabertooth even has a metal backplate (approximately 1 mm thick) to reduce bending stress on the motherboard. And lastly, almost all external and internal ports have plastic inserts to seal them off.

The Z97 Sabertooth has two iterations, the Mark 1 and the Mark 2. The former is the more feature rich between the two motherboards. The main differences would be the lack of 2 SATA 6GB/s ports and a SATA Express port on the Mark 2. The Mark 1 has two gigabit ethernet ports while the Mark 2 only has the Intel Gigabit ethernet port. And lastly, the Mark 2 doesn't have the thermal armour, back plate and dust guards. If you wish to focus on the more functional aspects of the board then you'll go for the Mark 2 which is priced about ₹5,000 cheaper than the Mark 1.

Having so many features focusing on one aspect can result in features being sacrificed on other fronts or if there are no reduction in features then you can surely expect a humongous price increment. With the Sabertooth Z97 Mark 1 this becomes evident when you look at the memory frequency support, the manual mentions that modules rated up till 1866 MHz are supported but you can always overclock and get more. In this manner, the OVL lists 2666 MHz modules as the highest this board was tested with. Other features like LED debug code panel and the more popular M.2 port are missing. ASUS does make available an adaptor available (not included with the motherboard) which connects to the SATA Express port and provides for two M.2 cards to be set up in RAID 0 also there is the Hyper Express SSD enclosure which .

The board doesn't have any analog video output ports nor a PS/2 port. But there are plenty of USB 3.0 ports (4 on the read and 4 via headers). Moreover, there is a Thunderbolt header as well which requires an add-on card to be inserted first.

The Thunderbolt card has been around for a while and more manufacturers have started including the header on their boards but with USB 3.0 being quite fast Thunderbolt hasn't really caught on.

The board is exceptionally well built given that the theme of the board is all about durability. The rear metal backplate other than reinforcing the board also acts as a heat sink for some of the transistors placed on the rear of the board. The dust covers which come with the Mark 1 are things that are cheap to produce yet aren't included with most motherboards. Some competitors have silicon covers for the rear I/O panel but internal connectors are generally left out. These internal inserts are especially helpful if you happen to live near the coast since corrosion is a huge problem in these areas. Moving on, it might occur to most enthusiasts that the plastic cover and the rear metal back plate might impede the installation of a custom cooler but the height of the plastic body around the CPU is about 35 mm tall and 26 mm without the shield. The rear backplate has a huge 100 mm x 118 mm cutout for those coolers with massive backplates.

For the audio, the Sabertooth Z97 uses the Realtek ALC1150 which is a pretty good codec with great implementation. An isolated power supply for the audio section isn't something we haven't seen so far. What ASUS has done more is to isolate the left and right channels from each other by running the traces on different layers on the PCB.

While the board may not have an M.2 port and support for high frequency ram modules, is still stands out on its own because its USP is durability. And a few sacrifices on the features front have been more than compensated. However, when compared to what the competitors have to offer, the Mark 2 might turn out to be more popular among the general masses because of its competitive price tag.

Mithun Mohandas

Price ₹19,100

73
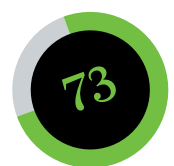
Features 66
Build 80

Specifications

Chipset: Intel Z97; **Memory support:** 4x1866 MHz upto 32GB; **LAN:** Intel I218V and Realtek 8111GR Gigabit Ethernet; **Audio:** ALC1150 7.1; **SATA:** 8x SATA III; **Expansion** - 3x PCIe X16(x16+x8+x4); **Dimensions (LxWxD):** 305 mm x 244 mm; **Warranty:** 5 years

Contact

ASUS Technology Pvt. Ltd
Phone: 18002090365
Email: reachus@asus.com,
Website: http://www.asus.in

Tech @ Work

Industry connect
108
We take a look at augmented intelligence in Evernote and talk about the Z3 with BlackBerry

Gaming Skills for University
Your gaming skills can get you into this university in South Korea where eSports is treated as any other sport **http://dgit.in/1qE0OJD**

New gTLDs
Vanity plates on the Internet

ICANN has finally opened the gates to hundreds of new gTLDs. While the one you want might not be available at the moment, it won't long before it will be

Mithun Mohandas
mithun.m@digit.in

Getting vanity plates for vehicles is something we Indians don't get to experience. There are VIP numbers which cost an awful lot of money and we've read about special plates going for as high as ₹17 lakh if more than one person bids for it. While vanity number plates may continue to be a dream for the average person, a vanity domain name may not be. ICANN (Internet Corporation for Assigned Names and Numbers), the authority on everything related to domains and the registrars that maintain them had only 22 TLDs (Top Level Domains) available till now. So everyone had to stick to a .com or .net or any of the 20 other domains available. Now that the plan for implementing gTLDs has finally come to fruition, we are going to see some creative new names arising.

What's a gTLD?
gTLD stands for Generic Top Level Domain. So instead of a .com or a .in you'll now be able to apply for a .personal or a .enterprises URL. ICANN is in the process of allowing companies to come forth and apply for new gTLDs. There is a gruelling evaluation session in the process to check for popularity and feasibility before they approve a new gTLD and assign a registrar to manage the same. The entire process can take two or more years and this began back in 2011 so now we

are about to see the launch of these new gTLDs. And by the end of 2014 there will literally be 100s of new gTLDs to choose from. Think about it in this manner, what if you could have a new gTLD just for your industry. If you're into landscaping and your company is named Triksy's then you could have a domain name as "tricksys. gardens" or if you have a restaurant then you could have a domain "yourrestaurant-name.menu" which would take people

directly to a menu page and have the option to order from there. Now think if there are restaurants all over the city and everyone decides to buy a .menu domain, looking up any restaurant's menu is all about typing the name of the restaurant and then adding .menu at the end.

The same goes on for the hundreds of different industries out there. The pos-

sibilities are numerous. The image on the right gives you a little list of all the new gTLDs available along with the rates they are selling for.

What's in it for you?
1. A plethora of options
Till now there have only been 22 gTLDs but by the end of this year you will have hundreds to pick from. You will have gTLDs suited for your business that makes it every the more easier to remember a website URL. Moreover, with more options the competition between the registrars that manage the gTLDs increases. This means you get cheaper domain names after the initial period. Also, if that URL you always wanted was taken then this is the chance to buy one with a gTLD suited for your business. This makes for a better URL than a normal .com or .net

2. Brand recall
Like we said, it becomes easier to remember a URL with a multitude of choices. If you own a resort then a prospective patron could simply type your resort's name and then add .resort to the end of it to land on your web page, i.e. if you've bothered to buy the domain.

3. Prevent squatting
With the introduction of more gTLDs comes the prospect of more and more scamsters hoping to swoop in on your brand name and buy a domain. Squatting is usually followed by offers to sell the

domain for a ridiculous price. With the introduction of the new gTLDs, ICANN introduced the Trademark Clearinghouse (TMCH) which helps brands who have already registered a certain brand name as a trademark to stake their claims to all URLs featuring the new gTLDs. We'll go into the mechanics of this system in the coming paragraphs.

4. Easy to search for

With all these new gTLDs comes the possibility that search engines could soon gear up to specifically search in certain gTLDs. So even if a prospective visitor does not remember your URL in its entirety, typing in a partial name affixed with the right gTLD could force the search engine to search the entire gTLD for your site. This feature is speculative at the moment but we do see promise in such a feature.

When can you get your domain on the new gTLD?

The entire process for a new gTLD takes a few years but you are given multiple avenues along the process to get your domain registered. Let's look at the process.

A registrar applies for a new gTLD based on market research for popular terms. This application period is about three months long, then comes the who process of evaluation of the said application which in turn takes up most of the time in the approval process. Once evaluated and authorised, a registrar is picked

The new gTLDs are quite expensive at the moment

The roll-out process for new gTLDs

to manage the gTLD (usually the applicant). After this step the registrar opens the gTLD to the clearing house.

The Trademark Clearinghouse (TMCH) is an authority that coordinates with trademark offices across the globe and verifies the trademark rights obtained by a company. The TMCH gives brands a single point of access for the companies to register URLs on the new gTLDs. If a brand owns a particular trademark then

that particular brand is given the first chance to register the URL. This opportunity lasts for sixty days and is termed as the Sunrise phase.

After the Sunrise phase, if the company doesn't register the URL then the URL will be passed on to the general public but the pricing of the domain depends upon the number of people contesting the URL. If two or more people contest the URL in the 30 day period then at the end of the 30 day period an auction will be held between all contesting parties and the winner walks away with the URL. This period is called the Landrush period. You can pre-book domains which is what makes you a contender in the Landrush period. There are different hierarchies in pre-booking which allows for those who pay a premium to get ahead of the line.

The last period is when the URL is opened to the general public on a first come first serve basis. Anyone visiting any registrar can now register a URL without the need for having registered with the Trademark Clearinghouse.
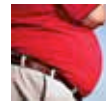
What's it going to cost me?

This comes down to which period are you hoping to buy your domain. The sunrise period will be the most expensive in this regard since you get to buy domains across every new gTLD that gets accepted. So each new gTLD will add to your expense. Then if you are interested in the Landrush phase then it comes down to a possible auction if more than one party applies for the same domain and this might end up costing more if you go in for buying a domain on every new gTLD. The last phase is when you get it for the cheapest but then again, if the gTLD is popular and the domain name you are applying for is also popular then in all likelihood you might end up missing on getting the domain that you wanted. We checked out the current pricing on BigRock and they aren't cheap compared to the normal .com and .net domains. Registering a .recipies domain will set you back by ₹3,099 while those in the adult business looking for a .xxx domain need to shell out ₹5,199. It's a small price to pay to get a better reach for your business and being a SOHO these should help you out.

A chat on Augmented Intelligence

Evernote is so much more than just a note-taking app, and pushing the boundaries of what's possibly the world's most preferred note-taking app is Zeesha Currimbhoy, VP, Augmented Intelligence, Evernote. Equipped with adding a new level of intelligence to the Evernote experience to ensure it stays ahead of the curve isn't as easy as it sounds. Excerpts from our exclusive interview:

Jayesh Shinde
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We've heard of artificial intelligence. What's augmented intelligence and how's it different?

Zeesha: Artifical intelligence is all about building an artificial human brain, so to speak; building a computer that can do pretty much everything that a human can do. And that's great. But at Evernote, we believe AI stands for something else. It's not artificial but augmented intelligence, because our goal is simple. We believe humans are good at doing certain things and they have unique qualities about them, and we want to retain them. Then there are certain things that computers are really good at too. So we want to combine the two competencies, utilize the computer's ability to compute large amounts of data in very short time and pair that with existing human intelligence. When you combine the two complementary systems and get them to work together, the results are just off the charts, as it's the best of both worlds. Designing a system that learns from your own behaviour, makes you more empowered, that's the kind of impact that we're striving towards with augmented intelligence.

How's such a system implemented?

Zeesha: The core implementations of augmented intelligence can span across a number of areas. We do things like rethink search – how people search for information. Make search a natural extension of how someone thinks. That's one of the things we did recently with Descriptive Search

Zeesha Currimbhoy, VP, Augmented Intelligence, Evernote

in Evernote. Another new feature called Related Notes is all about being able to show you the right information at the right time and when you need it the most. If we want Evernote to be the place where people work in and are most productive then Evernote should be able to work on your behalf by retrieving your own information (saved notes) at the right context.

Is Evernote's augmented intelligence going to be confined to the app itself or will it shape into an entity similar to Google Now, Siri or Cortana?

Zeesha: I definitely think that that's something that's going to happen soon. Google Now is great and a classic example of predictive intelligence and show you information before you want it. We're definitely thinking along similar lines trying to anticipate what you want but we're very focused on

you, your memories, and your work life. We want to be the place where you're most productive. So the type of information that we'll highlight will be very different. For e.g., let's say you're walking into a meeting and by looking into your notes history, calendar information, etc., we can notify you to read certain notes that we think will be helpful for you in the meeting. Your data in Evernote should work for you just like your brain works – you put something in your brain in the form of memories and just instinctively remember things at the right moment. That's the experience that we want.

Any privacy scares when you're handling such a huge volume of user data? And what all challenges did you face?

Zeesha: Evernote always puts our user's privacy ahead of everything else. As a developer – knowing the challenges in machine learning, data mining – the more data you have the better it is, and the more you can do with it helps you create a better experience. Having said that, when we at the AI team deal with data while implementing algorithms, we never cross user data boundaries. All our algorithms work only in the context of a single user data. This makes developing applications very hard. So we at Evernote don't have a single data problem, but 100 million small data problems. For e.g. how do you develop a word processor for a user who has English and Chinese notes? These are some of the challenges that we deal with that most people don't know about. Dealing with data and making our algorithms scale for users irrespective of whether they have 10 notes or thousands of notes is one of our biggest challenges.

Blackberry on Z3, the 'designed for India' smartphone

We interview Mr. Sunil Lalvani, Managing Director at Blackberry India, to get his perspective on what the Z3 has to offer to Indian Customer and why prospective buyers should choose the Blackberry

Soham Raninga
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How are things at BlackBerry India?

Sunil: Exciting times ahead. We are extremely confident that we can turn around BlackBerry. By the end of this fiscal year, we are forecasting our operations to be cash-flow positive. Beyond the monetary milestones, we are also thinking long-term and identifying areas that will help us leap-frog the innovation curve. We also see long-term value in BlackBerry and in five years, we expect to have a major play in the M2M (Machine To Machine) space. BlackBerry is well positioned to lead this charge as it looks to unite people and machines across the Internet of Things – from smartphones to in-vehicle telematics systems, smart appliances and much more. Everything will be connected and we would like to become a major hub of this next important technology wave with QNX.

BlackBerry Z3 seems to be a very important product launch for BlackBerry India, how are you planning to market it? Are you planning anything special and big to attract attention and create hype among the targeted segment?

Sunil: With the launch of the Z3 we are looking forward to bringing to Indian customers a fantastic device, the first one resulting from our Foxconn partnership. The launch of this product, built for our customers here in India, is a testament to how we are listening to our customers and delivering technologies that meet the needs of our core markets.

Sunil Lalvani, Managing Director, BlackBerry, India

Needless to say we have a 360 degree marketing campaign around it. We have some exciting partnerships in place with The Mobile Store and Flipkart. We also have an aggressive social campaign. Furthermore, we will be rolling out on ground activations across various touchpoints to bring the brand closer to our consumers.

While we are aware of the price segment that BB Z3 is targeting, can you define who the BB Z3 buyer is? Who is the core audience for the BB Z3 in India?

Sunil: The Z3 is designed with India in mind and for people looking for a smartphone that excels at communications, messaging and productivity. Available at ₹15,990, the Z3 provides a bigger screen, more RAM and longer battery life, bringing BlackBerry 10 in reach of a new generation of Indian customers.

With the Z3, BB now has 3 BB OS10 based devices in the ₹10-20K price segment, the Z3, Q5 and Z10. Is BB considering the sub ₹10K segment for BB 10 based smartphones?

Sunil: On the devices end, we don't want to adopt the mass market strategy and have never had a play in the sub $175 segment. Having said that, we have a healthy portfolio of devices across BlackBerry OS 7 and BlackBerry 10 OS. Our strengths lie in creating cutting edge devices that offer superior user experience coupled with great security and we will not dilute that proposition. We will continue to launch BlackBerry 10 smartphones for the 'urban youth' and 'prosumer' and for the first time smartphone adopters; we also have a robust base for the BlackBerry OS 7 devices.

BlackBerry has always been known for its hardware QWERTY keypads and messaging services. Do you see the same prospective buyer actually adopting to a full touch, large screen BB 10 device, the Z3?

Sunil: The BlackBerry Z3 is built with India in mind. Our customers here love to stay connected; especially when it comes to the latest trends; they look for more ways to connect, share and communicate, and the Z3 is the best tool for secure, reliable communications and collaboration with all. The Z3 gives consumers more ways to connect and share – with a longer-lasting battery.

Having said that BlackBerry is perhaps the only brand today that offers compelling device choices in both touch and QWERTY options straddling an attractive price range for a wide cross section of customers.

Esc 112

Skoar!
We've reviewed Watchdogs and Wolfenstein this month, and boy was it fun! Read what we think of the two games

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Community
Hack your way into getting more money in games and mess with the number of likes you get on Facebook

Plausible secret societies

We're taking it up a notch here, secret societies on their own have been a hot topic of debate, with many kooky folks building elaborate theories of these societies controlling the world. But what of societies that have been so secret that all we have is pure speculation...

The Navratnas
Mauryan Emperor Asoka was said to have formed a council of nine men, each of whom was tasked with protecting one sacred text of knowledge. Knowledge so powerful that the fate of mankind could be altered by anyone who possessed them all. Many kings were known to have such councils, few have been surrounded with such mystery as The Nine Unknown.

The Eight Immortals
Chinese mythology mentions eight immortal beings with powers that can destroy evil or bestow life. Highly revered in Taoism, their immortality has found mention in various texts and works of art throughout the decades. They live on a bunch of islands which also includes the Penglai Mountain Island, where bowls of rice and glasses of wine never run empty.

Babylonian Brotherhood
It is said that a group of alien lizard people control the U.S. Government. We know it sounds ridiculous but apparently 12 million Americans do believe this to be true. Now in all likelihood it might refer to the term "snakes" which is often used to describe politicians. Several people have been identified as members of the society including the Queen Mother.

Meliorare Society
Have you heard of eugenics? It's the belief regarding creating a better breed of humans through selective breeding and messing around with genes. The Meliorare Society might be fictional but the events mentioned in the novel do resonate with research activities in genetics. Who knows if there is a rogue group of Neo-Nazi scientists trying to create the perfect race.

Bharatiya Bhabhi Wing
Nobody's heard of this group but it isn't implausible. Indian women are said to own 11% of all the gold in the world. That means Indian women collectively own more gold than the US Federal Reserve. Using the current exchange rate this translates to ₹51,570,000,000,000 or 51.57 trillion Rupees. This makes them the Lannisters of the modern world.

New World Business Order
A recent release by WikiLeaks has showcased how an agreement called the Trade In Services Act (TISA) which was drafted by private entities across 150 countries gives them absolute power to permanently hold public services like healthcare and water supply across international borders. It allows them to profit from deregulation in all sectors. Let's call them the NWBO.

Car parts from tomato
Ford and Heinz have come together to create a bio-plastic using tomato by-products to make car parts **http://dgit.in/FordHeinzCarParts**

Google

10 useful Google Services
Google has a bunch of applications and services out there. Here are 10 of the most useful and unknown ones **http://dgit.in/UsefulGoogleServices**

Unwind

How we unwind

Footbaaaaaaaal!!
No one gives two hoots about football in the team except Robert and Jayesh. However, with the World Cup underway in Brazil, it's difficult not to go with the flow. The Web has been flooded with enough reactionary gifs, memes, and everyone trying to ride the football wave. Poor England, though. God save the Queen!

Outliers: The Story of Success
If you want to be successful, you should either practice something for 10,000 hours or have a bunch of "coincidences" occur through different points in your life that will gear you towards the path of success. Siddharth has been reading these kind of books for so long that he might come out with his own book one of these days.
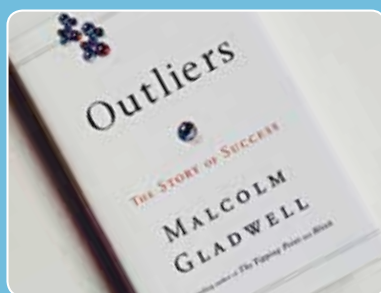
John Oliver - Last Week Tonight
One thing we simply can't have enough of is comedians passing witty backhanded comments about everyone's favourite target – America! Everyone at the Test Centre is magnetically attracted towards whichever computer is playing John Oliver's latest video to see a few cans of whoop-ass being unleashed every week.

digit DIARY

Anirudh has finally found his true home, a trip to Taiwan (to attend Computex) has made him a changed man. The quiet, efficient charm and tech savvy nature of the country appealed to something deep within the lad's heart. It was with a palpable melancholy that he left the country, already making plans to emigrate at the earliest opportunity.

Speaking of Computex, what a week it was! Anirudh and Kunal were the lucky two who were nominated to represent Digit at the event and what a time they had. With gadgets and gizmos pouring out of every nook and cranny, with geeks and journalists flooding the halls, it was heaven on Earth. We've covered the highlights on our new site, digit.in, and also in Buzz this month. Take a peek if you're interested.

Anirudh made it his mission to sample every type food he could find while Kunal embarked on a quest to photograph Taipei in its entirety. They spent their free time exploring the capital, sampling and photographing to their hearts content, marveling at the discipline of the people (nobody crosses a red light, ever, even if the roads are empty). It's truly a lovely place. Do make it a point to pop over if you can.

Coming back to India though, and to our office, the aftermath of an anniversary issue closing is strangely anti-climactic. Issue closed, all of us exhaustedly head home, leaving an eerily silent office and our vaguely frustrated TC Elf to sort out the mess that's left behind. This time however, the Elf had the test centre wholly to himself for the better part of a week and what he did during that time we can't even guess. All we know is that he's had a beatific smile on his face ever since, though we're guessing it's because he finally got the opportunity to list and catalogue everything in the test centre in peace and quiet. Why

all that peace and quiet? Mithun disappeared for a while shuttling between Bangalore and Kerala, Anirudh was in Taiwan, Siddharth in Kerala and Jayesh tending to his baby.

On a more interesting note, you remember the PC we made last month right? The "fastest" PC in India? The one we theoretically spent ₹16 lakhs on? Well, NDTV popped over for a spell and shot footage of our PC in action. You can find full details at **http://dgit.in/FastestPC2014**, when (and if) the video goes live on the Internet.

It was a nerve-racking time for us because despite the fact that we are accomplished geeks who'll rip the heart out of any philistine that will try to spread misinformation, we're notoriously camera shy. The prospect of a real, live camera crew descending on our office was quite disturbing to many of us, some of whom developed palpitations and started breathing into paper bags to calm our nerves. Siddharth even suggested downing a couple of shots of Vodka to soothe frayed nerves.

Needlessly to say, we finally did get our act together long enough to get enough usable footage for the few minutes of air time that we were granted (though it did take a few hours to shoot even that much) without the need for any external stimulation (remember kids, say "NO" to drugs).

Finally, we saved the best news for last, Mithun, who's been hanging around at the periphery of Digit for the last three years (freelancing on and off) finally bit the bullet and has now been formally inducted into the team. We also got ourselves a new minion (finally), a certain Abhijit Dey. He'll be with us for a while yet, and it'll be interesting to see what the lad blossoms into, with our sage guidance of course. Could he be the next "Intern of the Year"? Stay tuned.

Watch Dogs Review

Nikhil 'postwar' Pradhan
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In Watch Dogs, you play criminal and vigilante extraordinaire, Aiden Pearce, a computer hacker who is also strangely adept at kicking ass, shooting guns and being generally grumpy in the grand tradition of white male protagonists. After a hacking operation gone wrong, Pearce is hunted by killers who murder his niece and leave him more pissed off than usual. And that's where the game begins. In the mould of Splinter Cell: Conviction another game starring an angry white guy on a revenge trip, Watch Dogs starts off with you torturing/beating up a suspect. However soon after, you are thrown into the bustling real world city of Chicago as you begin your search for the people that you hold responsible for your misery.

The Gameplay

When Watch Dogs was first shown off at E3 2012, it kinda blew everyone's mind.

Hacking appeared to be a core gameplay element that was not only innovative but looked like it would let gamers use other methods than combat to achieve objectives. Hacking primarily lets you do three things – profile passers by and steal from their bank accounts, peek at their messages or calls or see if they're likely to be the victim of a crime or the perpetrator of one; hack into cameras and security locks; and control city infrastructure while driving to help you defeat enemies or get away from cops.

Profiling is the feature that was the focus of most of the pre-launch hype that

Watch Dogs has you play Aiden Pearce, white male action hero variant #6335

surrounded Watch Dogs and it's also the most disappointing. While it's neat for the first hour or so to see the profiles of bystanders pop up with intimate details, there's really no point to it. In fact, you'll probably end up switching off the 'Profiling' feature unless the game absolutely requires you to turn it on. Hacking into cameras is much, much cooler since you can chain hacks by pointing a camera at another one to see (or hack into) something that's far away from you. This also comes into play very effectively when you have a room full of bad guys and you can thin the crowd from a safe distance by simply hacking into cameras and then using them to set off explosives, electrical boards etc.

Hacking while driving is an essential component but it could also have been more effective and fun. You can change traffic lights, bring up barriers and bridges on the fly but most of it barely does a thing to affect your pursuers.

Apart from hacking and driving, Watch Dogs also has you taking down groups of
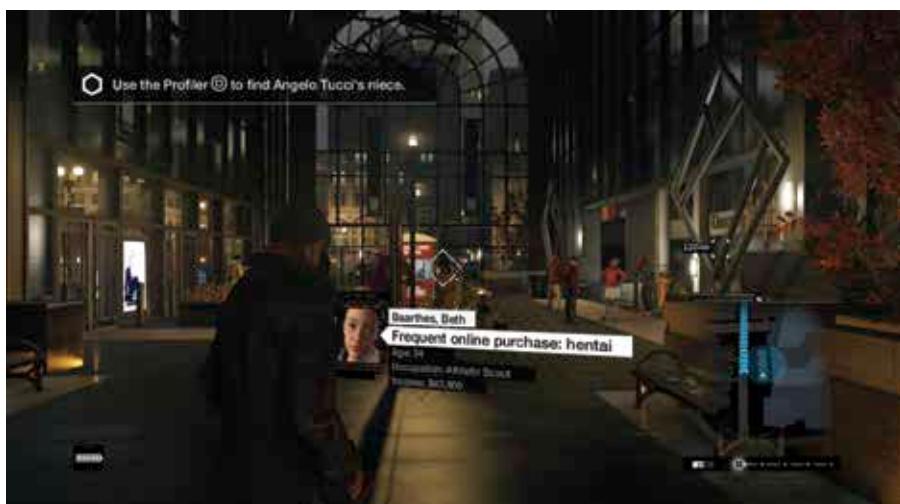
Profiling NPCs can be a little too interesting at times but is mostly a pointless feature.

enemies and it opens up both stealth and full-on combat as valid tactics. However, I did find that stealth seemed to be the best approach, at least when used initially to take down some of the enemies. Overall, the

...Or you could just get in your enemy's face with your baton.

combat in Watch Dogs is passable, especially if you plan on predominantly relying on a run and gun approach.

Watch Dogs employs an "always-on" multiplayer that lets other people hack into your game and try to hack you for points. Doing so will immediately alert you and then you'll need to search for the hacker and take them down. Watch Dogs also has some standard multiplayer game modes such as a

Stealth is a valid combat tactic & is fun when combined with hacking.

free-roam with seven other players and multiplayer car races.

The Performance

For a "next-gen" game, Watch Dogs' graphics aren't all that great. Don't get me wrong, the game looks good and the character models are also well done but there's really nothing about the look of the game that will make your jaw drop in awe. On the other hand, it is packed with NPCs with impressive voice acting. Overall, Watch Dogs' sound design is very well done and on a good pair of headphones, really makes virtual Chicago sound alive.

I played Watch Dogs on PC with an Intel Core i5-4430 CPU, 8GB of RAM and a GTX 660 running full HD. There were definite performance issues, like stuttering and low
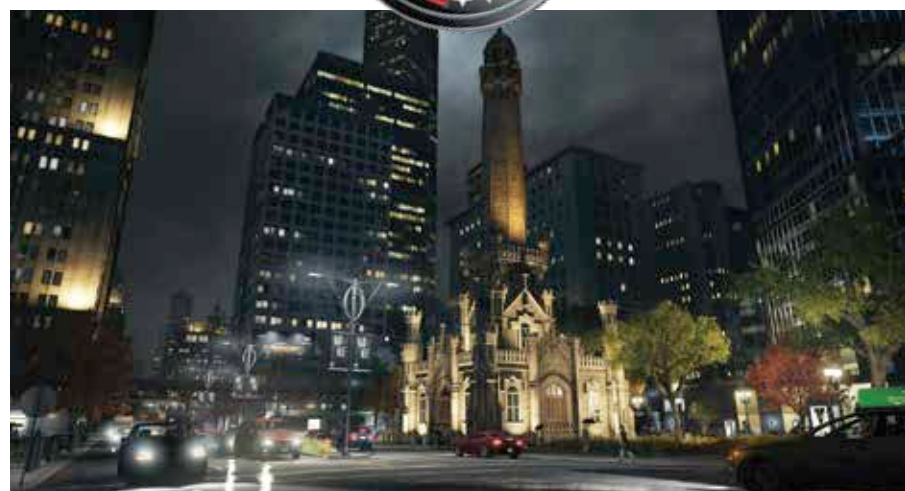
frame-rates, especially while driving and I was forced to push most settings to medium or low. This is, frankly, disappointing considering that my rig almost meets the recommended specs. I also faced some issues with connectivity on Uplay in the beginning. The game plays relatively well on a keyboard + mouse setup except for the driving bit.

The Bottomline

If you've reached this point in my review, it should be pretty evident that I was disappointed by Watch Dogs; a strange sort of disappointment, one not meant for something that was bound to fail, but rather one reserved for something that failed to achieve its potential. I went into Watch Dogs expecting a confident, innovative game that would emulate the term "next-gen" in every possible way, but what I got instead were the movies Swordfish and Taken glued together, which is really not as awesome as it may sound.

Thanks to NVIDIA for sharing the Watch Dogs Uplay code with us. ✳

Profiling NPCs can be a little too interesting at times but is mostly a pointless feature.

Wolfenstein

THE NEW ORDER

Bold, brash and beautiful

Anirudh "Mad Zombie" Regidi
readersletters@digit.in

Where modern shooters have tried to create the perfect dish with a multitude of "chefs" poring over a cut of meat and heatedly discussing the merits of sautéing it for one minute vs. two; to some success. Machine Games butchered the animal, pulled out its entrails and stuck it on a slow spit;

Frau Irene Engel, her guts you shall hate

presenting you with the still smoking haunches and accompanying condiments when done.

Classic games were simpler, and that's what the New Order is all about. It's a straight-forward, no-nonsense shooter that focuses on the life of Nazi hating Blazkowicz as he rains bloody vengeance down onto the heads of the heinous Nazis, who, by the way, have won the war and taken over the world.

When Machine Games sought to create a Nazi dominated world they decided to do it right. It's a world that somehow feels very wrong (from a moral standpoint), but very right at the same time. There are no graphical images of concentration camps and starved bodies that other games and movies use as contrivances to shock you. No, this Nazi-occupied alternate universe shocks you with the sheer, unthinking ruthlessness of a Nazi regime complacent in its absolute power and dominion over mankind.

Spoiler!!! She gets her nose done

It's a representation of a world that's lacking the despair of an Orwellian masterpiece, but carries with it the kind of mad hope, recklessness and moment-to-moment existence of a people that already knows that it's dead.

That surreal vision of a new world order is artfully and very capably brought to life by the IdTech 5 engine, an engine that has been refined and tweaked since the days of Quake to create what is arguably the most refined game engine yet. The world of Wolfenstein is beautiful, and even that is an understatement of sorts.

And what about the gameplay? In a word, it's fun. B.J.Blazkowicz is a one man killing machine that will let neither hell nor high-water stop him; he's just as adept at blundering into enemies and blowing them into tiny little bits as he is at stealth and secrecy. We were pleased to note that combat was fast-paced, but definitely without that mindless quality that defines a Call of Duty game.

Weild not one but two weapons at the same time!

Sadly, the game is not without its flaws, the chief amongst them being the utterly wasted story segments where you spend precious minutes hunting for some random object, be it a toy, a document or something as simple as a wrench. These segments are not fun, feel completely pointless and only keep you away from that combat you so desperately want to experience. Did we mention that guns are chunky, powerful and sound meaty, and that you can now wield two of them at a time?

If you remember those breaching sequences in Call of Duty, that's what many of the set-pieces in this game are like, except that they happen in real-time. You kick down a door, stab an officer in the head, put a bullet in the head of an on-rushing Kampfhund (the Nazi version of an armoured dog), then pump the room full of lead from dual-wielded shotguns and then you and the last enemy grab each other by the neck and try to stab the other to death as fast as possible. Glorious.

Verdict

Wolfenstein may be a blunt instrument, but sometimes it's more fun to pound enemies to a pulp with the bole of a pine tree than to artfully slice them with a katana. The New Order is bold, it's brutal, it's violent, but it's orchestrated to perfection. You'll be foolish to let this one slide under the carpet. Hier komme ich Sie Nazi Schweine! ✳

It's like a Nazi stormtrooper

I love the smell of Nazi blood in the morning!

MOAR!
Developer: Machine Games
Distributor: Bethesda Games
Genre: FPS
Price: ₹3,600 (Steam)

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E3 2014:
The Ultimate Round-Up

The gaming world has some wonderful surprises planned for the next couple of years

Nikhil 'postwar' Pradhan
readersletters@digit.in

This year's E3 was everything you could possibly want from the biggest gaming expo on the planet- it had games that everyone was looking forward to, it had games that nobody expected and it had some actually impressive games from Nintendo.

Here are the most important games and gaming news from E3 2014:

GTA V headed to the PC, Xbox One and PS4

The news that everyone expected yet were anxious for finally saw the light of day- Grand Theft Auto V will hit the PC, along with the two new consoles, sometime in August or September of 2014. And to that news we have but two things to say- "YEAH!!!" and "What the hell took you so long?!"

Far Cry 4 has elephants, auto-rickshaws, crazy villains

After the excellent Far Cry 3, we all expected the next Far Cry game to be good, but what Ubisoft showed off at E3 was simply incredible. Far Cry 4 is set closer to home, in a fictional Himalayan country and includes Hindi speaking villains, indigenous wildlife like yaks and elephants, snow-capped peaks and best of all, drivable auto-rickshaws.

Far Cry 4 will make its way to PC, last-gen consoles and new-gen consoles on November 18. You can watch the gameplay video here: http://dgit.in/1nSkSoC

Lara Croft is coming back

The Tomb Raider reboot from last year was a surprisingly good game. The new Tomb Raider game, clunkily titled 'Rise of the Tomb Raider', continues from where the last game left off with a Lara Croft who is still finding her way as an adventurer and is psychologically affected by the bloodshed from the previous game.

Rise of the Tomb Raider will be out summer 2015. Watch the reveal trailer here: http://dgit.in/1iqIrW3

Assassin's Creed gets co-op, is en amour avec Paris

After letting you step into the boots of pirates in the Caribbean of the 17th century, Assassin's Creed is back in its fifth installment (named Assassin's Creed: Unity) set in revolution-era France. This time around, and for the first time ever, you'll be able to take on the single-player game with three other friends. With detailed huge crowds, intricate architecture and gameplay that mixes up stealth, tactics and swordplay, Assassin's Creed Unity looks like it will impress.

Watch the gameplay video here: http://dgit.in/1pqKxWH

Yes, Dragon Age: Inquisition has massive dragons

Bioware and EA are in the final stages of readying Dragon Age: Inquisition for an October launch but that didn't stop them from releasing an impressive video (http://dgit.in/1pPlzSG) that showed off how players can take on a gigantic dragon with the help of both third-person combat and the classic tactical view that lets you pause the game decide on your next moves.

Rainbow Six: Siege goes back to the series' roots

The Rainbow Six games were well known for putting equal importance to both planning an operation and executing it. The new Rainbow Six: Siege shown off at E3 2014 seems to be headed back to that style of gameplay after a

detour into third-person cover based action territory. Ubisoft showed off a multiplayer 5 vs. 5 match last night with a team playing as a SWAT squad and another playing as criminals who've taken a hostage. With destructible environments, gadgetry and close-quarters urban combat, Rainbow Six: Siege seems to be on its way to a good showing.

Watch the gameplay video here: http://dgit.in/1nnsfRD

Uncharted 4: Drake's final adventure?

One of the Playstation's most successful franchises, Uncharted, will be getting its fourth installment next year and by the tone of the trailer revealed at E3 2014, the Playstation exclusive title looks like it may chronicle Nathan Drake's last ever adventure.

Uncharted 4: A Thief's End is scheduled to be out next year. Watch the reveal trailer here: http://dgit.in/1noIU8U

The Legend of Zelda goes open-world

One of the most loved gaming franchises in history will be getting a new installment next year and it looks like the most ambitious one yet. The new Zelda game will be the first 3D game in the series to be set in a truly open-world in the mould of Skyrim. The trailer revealed by Nintendo shows colourful, high fidelity visuals and all the charm and innovation one expects from a Zelda game. Watch it here: http://dgit.in/1qxHZIg

There's no party like a Mario Party

The Mario Party series is quite popular for its co-op style gameplay using which players run through a large set of mini-games. Mario Party 10, revealed at E3, will make use of the Wii U's control pad/tablet to allow one player to control Bowser and run all the mini-games for the other players. Check out the Mario Party 10 trailer here: http://dgit.in/1iqJllm

Make your own Mario level with Mario Maker

Ever played through a Super Mario game and wanted to make your very own level for Mario (and Luigi) to run through? Well, Mario Maker is just the game for you. Using the Wii U gamepad, you will be able to draw Mario levels and change things like the length of pipes, the placement of coins and power-ups etc. Watch Mario Maker in action here: http://dgit.in/SXjmWM

Mortal Kombat X revels in gore and bone splintering

There's a new Mortal Kombat game coming to town and like its predecessors, it may just be the goriest and most brutal game you can play. Apart from standard gameplay elements, Mortal Kombat X will let you play as three versions of any character and will also set up a persistent online tournament in which anyone from across the world can play. Revel in the gore in this video: http://dgit.in/1qllns0

The new Batmobile is both a car of justice and a tank of justice

Pretty much everyone is excited about the return of Rocksteady at the helm of a Batman game. The upcoming Batman Arkham Knight will for the first time let you drive the Batmobile around Gotham and the trailer released at E3 2014 shows that not only will the mythic vehicle be able to roar at incredibly fast speeds but it will also be able to change into a tank.

Why? Because Batman, that's why. Here's the E3 2014 trailer: http://dgit.in/1pqLTkb

Alien: Isolation could be the Alien game we've been waiting for

Forget gun battles, forget stealth take-downs, forget health packs and experience points, if you want to survive in the Alien: Isolation all you can do is run, hide and hold your breath. If the initial impressions of the media and the trailer shown off at E3 are accurate representations of the game, then Alien: Isolation could just be the scariest game you'll play all year.

The game will hit PC, new-gen and last-gen consoles in October this year. Watch the trailer here: http://dgit.in/1plmF4P

And here's the new Metal Gear Solid

Everyone who cares knows that there's a new MGS game coming to the PS4, this one titled "The Phantom Pain" which will be an open-world action-stealth title with base building as well and will also feature rideable horses with functioning digestive systems. MGS V is expected to launch at the absolute end of 2014 and here's a long cinematic trailer to keep you satiated till that moment: http://dgit.in/1plmIOG

Civilization goes far beyond Planet Earth

After basically letting you conquer the world in every Civilization game, the next installment will begin with you blasting into space to search for a new planet to conquer. Civilization: Beyond Earth will introduce new concepts like alien species indigenous to different planets and an upgrade tree that lets you either adapt to planets, make planets adapt to you or fanatically pine for Earth. Let the devs explain everything new with the game here: http://dgit.in/1m2XgxS

Crytek makes a Homefront game look interesting

Crytek just did the impossible, it made a Homefront game actually look like something we'd like to play. Instead of the linear mess that the original Homefront was, the new one, Homefront: The Revolution, will be set in an open world and will have gameplay that focuses on guerilla warfare rather than all out gun battles.

http://dgit.in/1oNG3Mb *

digit SQUAD

Every month we highlight some aspiring tech writers and their spirited attempt to get published in the magazine. Let's have more!

More money, more likes

Praneet Sah

Hacking Almost Any Game with Cheat Engine

Have you ever wished for tons of money? It might take you years to earn it in real life, but in games it's just a matter of a few minutes and so "tweaking".

If you've ever googled about hacking a game, then you must have heard of Cheat Engine. Cheat Engine is a tool which opens up a lot of possibilities and learning to use it well goes a long way into getting a hack to work. Don't think that this trick applies to everything in a game, some games have parameters which aren't displayed numerically such as your health bar in games like Assassins Creed or may be thinking to hack car speed in Need For Speed (because the speed changes rapidly). So you must be wondering that where will this even work!? Well, this trick will definitely work on somewhat static things and on things which do no change quite fast but with skill you can even hack Need For Speed and the more difficult to catch parameters in games.

Let's say you want to hack the amount of money in a game, since money is fixed/constant and isn't going to change automatically. Let's begin, download and install Cheat Engine. Now start your game, in my tutorial I'll be going with "Watch Dogs" since it's a new game. Load your game, and start playing. A middle click in the game and we get to know how much money we have. Please note that you might run a different game and therefore there could be different ways to know your current money. Anyway, note down your money somewhere (we'll need it later). Now press "Alt + Tab" to switch between your game and Cheat Engine. Click on the "Open Process" button or navigate to "File>Open Process" and a popup would appear with the list of all the processes running. Within that list, locate your game, and double click on it. Now your game has been loaded in Cheat Engine.

Now look in Cheat Engine, there would be a text field, placed just below the text "Value". In that field, enter your money that you copied from the game, and then just make sure that the scan type is "Exact Value" and value type is set to "4 bytes". Now press the "New Scan" button, after a few seconds you will see a very long list appear in the left column. If it's not very long and has only 10-50 results then skip the next paragraph.

Since the list is very long, you would need to filter out the useless values or else the game might crash. Alt + Tab into the game and do something by which you lose or earn some money. As I was playing Watch Dogs, so for me, looting a car would do, or maybe in your games you know what you need to do in order to earn or increase the money at least by 1 buck. Now again copy the increased/decreased money and then Alt + Tab into Cheat Engine and then paste this new amount in the text field and then press "Next Scan". Now newer values would be updated in the left column. There are chances that this time also the result is not under 50 and there are way too many values. So all you need to do is to repeat the process specified in this paragraph until less than 50 results in the left column. For Watch Dogs I had to do this around 3-4 times.

Now select all of these remaining results by clicking on any one of them and then pressing "Ctrl + A" and then just drag them and drop them into the white area just below, or you may also press the red arrow pointing towards lower right side. Now in the white area, again select all the results and then right click on them and then go to "Change Record > Value". A popup would appear and in this enter the amount of money that you want to gain (just don't define insanity) and then press "ok". Now make sure that every result's value column has that value that you just put in that popup box. Now click on the check box of every result, present under "Active".

Now again press Alt + Tab and check your money. If it has been updated to your hacked value then cheer otherwise the change might be reflected when you loose or gain some money. This trick is not just limited to Watch Dogs or any other game, neither it is limited to money only. You can use this trick to hack other games as long as it isn't an online games, then there are chances that it might not work, but still you can give it a shot.
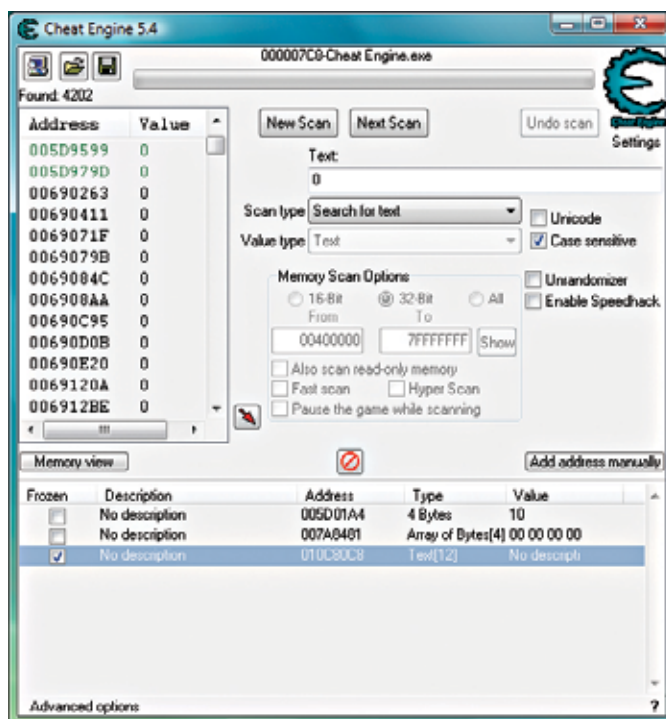
Cheat Engine is often used to make trainers

Hacking like Count in any Facebook like button

At times we become judgmental towards a site just by seeing number of likes in the "Like" button. Well, do you know that, the number displayed in that like button can be *genuinely* hacked? No, we're not talking about displaying a fake number or maybe adding fake likes; we're talking about fiddling with that number so that Facebook would think that people have actually clicked that "Like" button. It's just simple XSS trick which indirectly gets Likes. Apart from it, this trick is also a bit complicated, since you have to use different browsers for different purposes. Download and install Firefox and Chrome.

Before we even begin doing this, let us warn you, that doing so is a bad practice and it might get your website penalized by Google Panda, so in return you'll have poor site reputation. The irony shouldn't go unnoticed. This trick doesn't increase the number of likes on a Facebook page or your status or a pic you've uploaded; this trick will only work on those small blue coloured "Like" buttons that you see on random websites. Take a look at this pic of how that button should look.

OR Maybe like this

Let's begin then, open up your website or any web page which has such a button (as shown in image) using Mozilla Firefox. Now there are two ways to know the URL of that "Like" button. Either you can simply copy the URL as shown in the address bar (this might fail if there are many "Like" buttons on a single web page) but to be on the Safe Side and to get the correct URL you need to right click on that "Like" button and then click on "This Frame" > "Show only this Frame" (use Firefox for this step). Now a page would load and its address bar would look something like this:

https://www.facebook.com/plugins/like.php?href=http://www.yourURLisTHIS.com/xx/xx/something.html&layout=button_count&show_faces=false&share=true&width=75&action=like&font=trebuchet+ms&colorscheme=light

Now in this whole URL you can spot the portion that you require, simply copy the part that comes after "https://www.facebook.com/plugins/like.php?href=" up till the next ampersand (&).

Half of the process is done, now all you need to do is to open Google Chrome and log into your Facebook account. Now on your timeline click on status update and then type "Like this + the_URL_that_you_extracted" without the quotes. Wait a few seconds till Facebook fetches the web page details from the URL that you pasted in status update box and then post the status update while making sure to set the privacy as public for this post. Go to the newly posted status message, under your name there would be some time displayed which would look something like "2 mins ago" or may be "a few seconds ago" or something similar, now just click on that time and another page would load where only your status update would be shown. On this page press "ctrl + shift + j" and a console would appear from below. Now there is a XSS script that we need to paste

in the browser but it's quite long so you can get it form this link http://pastebin.com/uW864VS4. Now paste the XSS script in this console and press enter, some warning or error message would appear in the console, ignore that. Also a Facebook pop-up saying that the content is unavailable would also appear, ignore that as well. Now wait for 10-20 seconds and you will see that your friends are tagged on that post. Now go to the original location of that like button i.e. the website where you saw it. The number of likes should be more now! You can repeat the step of pasting the script in console many more times and every time the number of likes should increase.

This vulnerability is easily exploited and not everyone knows this trick. There is a chance that your friends might un-friend you for infringing upon their privacy. I reported it to Facebook's White Hat bug bounty program, but those guys rejected it saying that it's a social engineering hack and they (Facebook) can't do anything about it. I will not be responsible for what you do with this trick.

Live to Game....

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